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Fuel Policy

ADDRESSING a meeting of the Coal Industry Society in London on Monday, Mr. Richard Wood, the Minister of Power, told members that when he joined the Ministry in 1959 there was an insistent demand from various quarters for a national fuel policy, and the demand was no less insistent today. He could have added that the same demand was being made 20 or even 30 years ago. All political parties have made play with the idea. Successive Governments have toyed with it; perhaps commended it as a concept; even paid lip service to it. But at no time has a national fuel policy been officially framed and set down in so many words. Many people and many organizations have been ready and willing to offer advice as to what the policy should be, but they have never succeeded in persuading the Government of the day into making a categorical statement of aims and objectives which could in any way be construed as a declaration of fuel policy to be regarded as a charter for the future. In this Governments have surely been wise, for in no other sphere are conditions so likely to change so quickly.

Sectional interests demanding a national fuel policy somewhat naturally have in mind a policy that serves their own particular interests. They are not truly seeking a national policy, which would have all interests in mind; rather are they seeking to impose on the nation a policy to suit themselves. What are the arguments put forward in support of a national fuel policy? Mainly they are advanced in support of the coal-mining industry, and generally they are directed against oil. Here we have an indigenous industry producing some of the finest coals in the world; yet we allow—indeed, encourage—our railways to desert coal, we permit our electricity generating stations to turn over to oil, and we acquiesce in our gas industry bringing in methane from abroad. So the arguments run, and they are not altogether specious. But can it be stated with any assurance that to insist on the use of coal wherever its use is possible is in the best interest of the nation, or even in the long-term interest of the coal industry? Coal's experience of a long period of control was not a happy one, and although it is nowhere suggested that control should be brought back in its entirety, the use of coal by Government edict would mean a measure of control over some, if not all consumers, and might well prove to be a two-edged weapon in the hands of officialdom.

Controls of any kind tend to stultify initiative, retard development, and kill enthusiasm. Much better, surely, to allow competition free play to stimulate business enterprise and encourage technical progress, leaving the Government to step in only if things get really out of hand. It is significant that the National Coal Board, in official statements in regard to the competition from oil, has confined its complaints to the flooding of the country with imported oil at low prices. If it can be proved that oil is being imported and sold at cut rates, in a deliberate attempt to damage the coal industry beyond repair, then it is a matter that surely demands Government attention. Normal competition is another matter. Once a Government starts imposing restrictions there is no knowing when the process will end. Industries are much better left free. Favour one and others will suffer, and in the long run the favoured industry will probably suffer also.

Mr. Richard Wood put his finger on the problem when he said that in attempting to frame a policy there was often a conflict between getting results quickly and holding on to them in the long run. To be successful, any fuel policy adopted nationally would need to be so flexible that it would not rightly warrant the description. Demands change, techniques alter, costs and prices vary. The Government's general policy, as distinct from a national fuel policy (euphemistic term!), was declared by Mr. Wood as "to maintain competition between the different sources of power and to preserve the consumer's freedom of choice." He was careful to point out that such a system, based on competition, did not mean "a free-for-all." There were considerations that the market view alone was liable to ignore, among them being national security and the balance of payments. These considerations, the Minister said, justified the Government in framing its policy with some bias in favour of indigenous resources, and he went on to list some of the ways in which this bias has been applied. He pointed out that there are today severe restrictions on coal imports and on oil imports from Soviet block countries. The original programme of oil-fired power stations has been modified in favour of coal, and there is a close liaison between the coal and gas industries in relation to new gas-making projects. Where costs are similar the Government encourages the use of solid fuel for heating public buildings, and the Government lends money needed by the coal industry for development at lower rates than could be obtained in the open market.

It is argued that the Government should go further in tipping the balance in favour of indigen-

ous fuels. This, as the Minister pointed out, is very much a matter of judgment. Mr. Wood thought the balance about right as it stands, and most unbiased observers will agree with him. Coal should stand on its own feet. Properly equipped technically and run commercially it can reaffirm its position as the mainstay of the nation's fuel and power supply. It does not need external help or adventitious aid. All it requires is a fair crack of the whip, from Parliament and public.

Steel Sets Up Another Record

ANOTHER record has been set up by Britain's steel industry. Production in October reached the all-time high of 497,000 tons a week. This compares with the previous highest of 485,100 tons in March of this year and with 441,000 tons a week in October, 1959.

Production of pig-iron also set a new record of 313,900 tons a week, compared with the previous highest figure of 312,300 tons a week last March and 269,800 tons a week in October, 1959.

Latest pig-iron and steel output figures (in tons) with the corresponding 1959 returns are shown in the following table:—

Period.	Pig-iron.		Steel ingots and castings.	
	Weekly average.	Annual rate.	Weekly average.	Annual rate.
1960—August ..	291,400	15,152,000	422,900	21,988,000
September ..	305,800	15,900,000	481,000	25,012,000
October ..	313,900	16,321,000	497,000	25,842,000
1st 10 months	301,500	15,677,000	464,600	24,159,000
1959—August ..	219,600	11,418,000	337,100	17,527,000
September ..	251,100	13,057,000	426,400	22,171,000
October ..	269,800	14,029,000	441,400	22,953,000
1st 10 months	234,200	12,179,000	376,500	19,575,000

Injunction for Foundry Services, Limited

NOTICE is given that as a result of proceedings taken against it by Foundry Services, Limited. in the Chancery Division of the High Court, Harborough Construction Company, Limited, has submitted to an injunction restraining it from infringing Letters Patent No. 627,678, owned by Foundry Services, Limited. The patent refers to exothermic products sold by Foundry Services, Limited, under the registered trade mark "Feedex."

Certain of such products are further protected by Foundry Services British Letters Patent No. 744,490 and Harborough Construction Company has also undertaken to refrain completely from the manufacture and sale of exothermic compositions with a fluoride content in the range of 0.1 per cent. to 10 per cent. Letters Patent No. 745,668 which cover the range of 0.1 per cent. to 0.75 per cent. fluoride, have been assigned to Foundry Services by Harborough Construction Company, which has paid the costs of Foundry Services, Limited, arising out of the legal proceedings.

Passing Thoughts . . .

YOU could do a wonderful job in public relations if you got hold of local leaders of opinion and brought them to the coalfield. Your roles as colliery managers are not understood. You are a valuable and indispensable element in the production of coal in the country, but you hide your light under a bushel. Do your own public relations work and other people will know of the enthusiasm, skill, hard work, and energy used in the production of coal.—MR. JAMES CALLAGHAN, MP, speaking to South Wales colliery managers.

There is still a tendency in this country to think we not only know what is best for ourselves, but also what is best for our customers—MR. REGINALD MAUDLING, *President of the Board of Trade.*

I am more than ever convinced that the fulfilment of social responsibilities is the very purpose of business and that invention, productivity, and profit are only means, very necessary means, to this end. Technologically we are travelling ahead at the speed of a jet plane; socially we are still plodding along at the pace of an oxcart.—MR. G. RONALD PRYOR, president of the Institution of Production Engineers.

I hate restrictions and controls—the brake and the accelerator and all the rest of it. But I put up with it because it is better than rip-roaring inflation.—MR. ANTHONY BARBER, *Economic Secretary to the Treasury.*

I think one of the most important aspects of the preservation of industrial peace is the speeding-up of information to the workshop floor, and a general quickening of negotiations, which at present can be very slow.—MR. WILLIAM CARRON, president of the Amalgamated Engineering Union, speaking at a meeting sponsored by the British Institute of Management in Leeds.

Investment in private industry cannot subsist in a vacuum. The object of investment is after all to stimulate consumption, and if consumption is limited sooner or later investment will be also.—Financial Times.

Anyone, it seems, who is out of his 'teens, who doesn't ride a scooter, who doesn't call a gramophone a record player, who isn't the fugitive from the father of an heiress, who doesn't prefer caffein to alcohol, who doesn't think his country is always very wrong, is an outmoded square, and the sooner we flood Australia with Chinese the better.—JIMMY EDWARDS, the comedian, in In Praise of Hunting (Hollis & Carter, 25s.).

We understand that some of the departments of a certain Midlands factory have posted notices to the effect that fines will be imposed for the future upon those of the gentler sex who shall appear at their work encased in crinoline, which habit, it is put forth, is, in some of the various occupations of the female operatives, as offensive to decency as dangerous to persons wearing it.—Birmingham Post, November 2, 1860.

EXPANDED METAL COMPANY, LIMITED—Over 98 per cent. of the 734 776 5s. ordinary shares offered by way of rights at 18s. 6d. per share have been taken up. The rest of the shares have been sold in the market at a premium and the net proceeds will be distributed in due course to the ordinary stockholders to whom they were provisionally allotted in the first place.

"Not Down—Nor Out"

COAL INDUSTRY REVIEWED BY MINISTER OF POWER

"COAL is not 'out'; it is not even 'down'," said the Minister of Power, Mr. Richard Wood, speaking at the Coal Industry Society luncheon in London on Monday. Outlining some of the difficulties involved in dictating a national fuel policy, the Minister expressed his conviction that coal would remain the principal source of energy in Britain and that total home and export demand would not be far from the present level.

With no prospect of rapid decline or extreme pressure to produce extra coal quickly and at high cost, the industry had an opportunity to become more compact and efficient, better equipped and organized, and able to offer good wages and improved working conditions.

Much had already been done, but greater efforts would be needed to improve efficiency and maintain competitive power. The industry must reap the full benefit of the National Coal Board's large investment in new pits and major reconstructions by working reorganized pits to full capacity.

National Fuel Policy

Discussing some of the difficulties inherent in framing a national fuel policy—for which there was much clamour—Mr. Wood said that the aims of the Ministry of Fuel and Power Act, 1945, and the broad aims of Government policy in guiding the economic affairs which formed a background to fuel policy were liable to conflict. There were other uncertainties—demand changed, techniques altered, and costs and prices varied.

The Government's general policy was to maintain competition between different sources of power and to preserve consumers' freedom of choice. Competition, a valuable spur to efficiency, avoided the need for and the dangers of the great administrative machine necessary if the Government tried to dictate which fuel should be used for which purpose.

To work effectively, however, competition must be supplemented by measures to take account of considerations the market alone might ignore. Those considerations justified tipping the balance in favour of indigenous fuels when available at economic costs and equally suitable to meet consumers' needs.

Some argued that the Government should tilt the balance further in favour of indigenous fuels, the Minister said. He believed, however, that it was about right. Adequate account was taken of national security and balance of payments and the coal industry was given a fair chance to develop and continue as the mainstay of the nation's fuel and power supply.

It was not only in the producing industry, however, that improvements in efficiency were essential. The national reputation of coal largely depended on the kind of service given by the merchant—the "public face" of the industry. There might be a "minority of merchants who might not be giving a fair deal" and he was giving serious consideration to protecting consumers against them. But it was clearly in the interests of coal producers and distributors to do their utmost to evolve new arrangements and improvements themselves to win the confidence of the public.

NCB Staff Superannuation Scheme

INCREASES in income, benefits paid, and total assets, but a slight decrease in membership over the previous year as a result of the run-down in staff numbers are shown in the 13th annual report and accounts of the National Coal Board Staff Superannuation Scheme for the year ended April 5, 1960. During the year membership fell by 2,800 to a total, excluding pensioners, of just over 103,000.

Total income for the year was £18,700,000; contributions by the NCB, £8,300,000, and by members, £4,200,000. Investment income was £6,000,000, representing a realized yield on the average total of the fund of £5 4s. 4d. per cent., compared with £4 18s. 1d. per cent. the previous year. Total expenditure on benefits during the year increased by £1,500,000 over the previous year to £6,100,000, of which £2,400,000 was on retirement pensions and £1,900,000 on retirement lump sums.

At the end of the year some 13,700 retirement pensions were being paid together with 1,000 widows' pensions and 700 children's allowances of a total annual rate of just over £2,500,000.

The amount of the scheme's fund, built up to meet the future benefits of its members, was £120,800,000 and its investments were distributed as follows:—Gilt edged, 32.03 per cent.; debentures, 21.72 per cent.; ordinary shares, 28.79 per cent.; real property, 16.03 per cent.; other investments, 1.43 per cent.

Midland Miners' Fatal Accident Relief Society

TRIBUTES to Mr. R. Ringham, chairman of the East Midlands Divisional Coal Board, who retires at the end of this month, were paid at the annual meeting on Saturday of the Midland District Miners' Fatal Accident Relief Society. Mr. Ringham has been a member of the society's board of management for seven years.

The chairman, Sir Robert Martin, reported that the membership of 75,067 showed a decrease of 3,617, compared with last year. This was due to the compulsory retirement of miners. The year had, otherwise, been a normal one.

SCHOOL on "stilts," built so that it can be jacked up if mining subsidence causes it to sink, was opened at Ripley (Derbyshire) last Friday.

Personal

Directors Advised to "Go Oversea"

EXPORT director of Martin, Black & Company (Wire Ropes), Limited, Coatbridge, Scotland, Mr. G. A. Black, who has just returned from a three-month round-the-world export tour, stresses the need for personal contact between head office and resident representatives oversea, as well as customers.

MR. G. A. BLACK

"Go oversea, backed by a product with a good reputation, and you will find customers and distributors pleased to see you." Mr. Black, who has made regular oversea trips in recent years added: "It is not often that I come back with a large order in my pocket, but they follow later in their own good time. Our steadily advancing percentage of exports—about 45 per cent.—bears that out. Not bad for a company that only began exporting seriously 10 years ago!"

Among the countries visited by Mr. Black were India, Malaya, Singapore, Hongkong, the Philippines, Canada, and the US.

Presentation was made recently to Mr. JAMES BROWN, deputy manager of Horden Colliery (Co. Durham) on his retirement. The presentation was made by Mr. J. T. Robson, manager of Group "A" of the No. 3 (South-east Durham) Area of the Durham Divisional Coal Board, whose life Mr. Brown helped to save in an explosion at the pit seven years ago.

On behalf of the Queen, Mr. RICHARD WOOD, Minister of Power, presented awards to some 21 members of the coal, electricity, gas, and quarrying industries at Lancaster House, London, yesterday (Thursday). National Coal Board recipients included:—BEM (Gallantry), Mr. W. SOUTHGATE; BEM (Meritorious Service), Mr. J. B. GRIEVES, Mr. P. HASTIE, Mr. W. HAWKSWORTH, Mr. H. KISBY, Mr. D. J. LEWIS, Mr. A. MEAD, Mr. R. V. NELMS, and Mr. F. RODGERS; Queen's Commendation for Brave Conduct, Mr. T. JOYCE.

Mr. R. NEATE, senior research officer, and Mr. W. J. DACEY, research officer (computer programming), employed in the operational research department of the Abbey Works of the Steel Company of Wales, Limited, read a paper at a recent meeting of the iron and steel division of the Metallurgical Society of the American Institute of Mining, Metallurgical and Petroleum Engineers. The invitation to go to the US followed their success in winning a prize of 20 guineas for the best scientific contribution in the British Computer Society's journal during the 1959-60 season. The prize was for a paper on "A Simulation of Melting Shop Operations."

Presentation was made to Mr. A. HENDERSON on his retirement as chief mechanical maintenance engineer, steel division, Steel Company of Wales, Limited. Several of the company's departments have been developed under his direction. The presentation of a casket containing Premium Bonds, was made by Mr. W. F. Cartwright, assistant managing director and general manager, steel division, on behalf of the directors and his colleagues in the division.

Mr. R. SEWELL, information officer to the research and development department of the United Steel Companies, Limited, has been seconded to the British Iron and Steel Federation to assist at its stand at the British Fair in Moscow next year. He has been selected largely because of his knowledge of Russian. Mr. Sewell is at present producing bulletins dealing with British rails and steel sleepers, which are to be translated into Russian and submitted to the Russian authorities.

Returning from a week's visit to Israel Mr. CECIL HURST, deputy chairman of Samuel Osborn & Company, Limited, announced last week that the company is to add another section to Engineers Tool Manufacturing Company, at Herzlia, Tel Aviv, which Samuel Osborn controls and of which Mr. Hurst is chairman. The Sheffield company is also to take a minority interest in an Israeli firm of file manufacturers. Mr. Hurst was accompanied by Mr. J. E. ROBSON, London director of Samuel Osborn.

Chief scientist of the Central East Area of the Scottish Divisional Coal Board, Mr. W. T. ALLAN, has retired after holding the post for 13 years. He started work with the Carron Company, Falkirk, and became chief scientist of the Shotts Iron Company, Limited, in 1922. During the war he was a member of the Lanarkshire Fuel Efficiency Committee and he has also served as a member of the National Dust Evaluation Committee and the Scottish Divisional Coal Board dust measurement technical committee.

Chemico Gas-cleaning Plant for RTB Project

CONTRACT to supply a complete gas-cleaning plant has been awarded to Chemical Construction (G.B.), Limited, by Gutehoffnungshutte (GHH) to be used in conjunction with the oxygen steelmaking rotor furnace GHH is supplying to Richard Thomas & Baldwins, Limited, at its Redbourn Works, Scunthorpe (Lincs). This project will be the first application of the Chemico P.A. Venturi Scrubber in the UK for the elimination of iron oxide fumes from an oxygen steelmaking plant, although Chemico has at present six similar type installations abroad and several others under construction.

The gas-cleaning plant will handle 106,000 c.f.m. of saturated gas and includes a filtration plant for the removal of solids from the scrubbing water. It is expected the installation will be in operation early in 1961.

Strike May Affect Sales Trip

BECAUSE of the strike of shipwrights and burners in the lower Clyde reaches, Sir William Lithgow, chairman of Lithgows, Limited, shipbuilders, may cancel a six-week tour of Jamaica and South America by which he hoped to secure more orders. Mr. Alexander H. White, deputy chairman, said that Sir William felt that there was little use in securing orders when strikes could mean long delays in delivery.

The strike has now been in force for over seven weeks and involves 393 shipwrights and 157 burners. Over 2,700 men in other trades have been laid off because of it.

RTB's Iron-ore Needs

OXFORDSHIRE OBJECTS TO PROPOSED SOURCE

APPLICATION of Richard Thomas & Baldwins (Mineral Recovery), Limited, to mine for ironstone over 4,700 acres of north Oxfordshire was the subject of a Ministry of Housing inquiry which opened at Banbury on Tuesday. The inquiry, which is being conducted by Mr. H. F. Yeomans, heard that some of the plant at RTB's new Spencer steelworks has been designed to use Oxfordshire ironstone and might become redundant if not so employed.

Opening for RTB, Mr. John Widgery, QC, stressed that the Government had already taken the decision to increase the use of home-produced ore —it was cheaper, it saved foreign exchange, and supplies were independent of foreign politics. Oxfordshire ore was wanted because it was near to Newport and its chemical constituents were satisfactory. The new strip mill costing about £115,000,000 was scheduled to produce 1,400,000 ingot tons of steel a year in the first stage starting in 1961. There would be a second stage at which production would go up to 3,000,000 ingot tons.

RTB envisaged working the Oxfordshire ironfields from 30 to 35 years with about five faces being cut simultaneously. The company, therefore, wanted to have control of the whole area, working an average of 30 acres a year which should produce about 1,000,000 tons of iron ore a year. The total area denied to agriculture at any one time would be about 60 acres and in every case restoration would be made without delay.

Designed for Home Ore

Cross-examined by Mr. R. V. Cusack, QC, for the Oxfordshire County Council, Mr. R. A. Hacking, director of research at RTB's central laboratories, agreed that 100 per cent. foreign ore was acceptable technically at the Spencer Works, but equipment already started was designed specifically to receive Oxfordshire ironstone and to apply the special handling it needed. He could not say how much money his company was planning to spend on plant which "may be redundant if the application is not agreed," but it was "quite a substantial sum." He also agreed that when the supplies in Oxfordshire ran out RTB would have to turn to imported ore if other home supplies were not available.

Before Mr. J. R. C. Boys, head of the development division of the Iron and Steel Board, could present his evidence there was a long discussion on the position of Government officers giving evidence at inquiries of this kind, as it appeared that such officers were confined to evidence on factual matters as distinct from policy. Mr. J. L. Arnold, QC, for the North Oxfordshire Ironstone Areas Protection Committee, protested that the board had taken up a position of immunity which no other body in the country enjoyed. If Mr. Boys could not be asked questions on policy somebody must attend who could.

Mr. Cusack then pointed out that in the 1959 report of the Iron and Steel Board it was stated that the new Spencer Works would use substantial quantities of home ore which would be drawn from Oxfordshire —although permission had not yet been given. He asked whether this was not "jumping the pistol." Mr. Boys replied that if the Spencer Works had had to wait for the inquiry it would have been in a serious position. The extract from the report expressed an intention, but intentions could be frustrated.

Mr. Cusack suggested that the time would come when the company would not be able to get foreign ore. "Is it not sensible to use foreign ore while you have it, and keep home ore for an emergency such as Suez?" he asked.

Mr. Boys replied that in an emergency rapid expansion was necessary and the more orefields there were in operation the better. "Not if you use them up," Mr. Cusack retorted.

Cross-examination of Mr. Boys was continued on Wednesday when Mr. Cusack asked him if it was usual to start building a works on the basis of certainty of getting particular supplies and then to start looking for those supplies. Mr. Boys replied that it would be unusual but it was not done in the case of the Spencer Works.

He went on to tell Mr. J. M. Johnston (for a local landowner) that the plant installed to take Oxfordshire iron-ore was worth about £2,000,000. It would be for the company to answer whether such installation was "a commercial gamble." It would depend how far the work had progressed before one could say how much of the £2,000,000 would be wasted if the application before the inquiry was refused.

Mr. Arnold said that it had been argued by the applicants that home ore was needed because of political uncertainties abroad. But was not the export of ironstone important to the economic viability of many underdeveloped territories, for instance, Mauritania, Liberia, Sierra Leone? Would not one way of eliminating dangerous political uncertainties be to increase the prosperity of these countries, which would also lead to higher consumer standards and put them in a better position to buy our manufactured goods? As for the arguments about shipping problems, he claimed, and Mr. Boys agreed, that the limitation of shipping was not a present factor.

Third witness for the applicants was Mr. W. E. Smith, the firm's general manager. He agreed that there would be temporary scars across the landscape and that ground services after the excavation would not be in the same place as before. It would not produce a flat expense of land like a prairie. He thought that the amount of land used at any one time would be nearer 200 acres than the 60 acres previously mentioned.

ONLY ONE COLLIERY in the division—Binley Colliery, Coventry—is being considered for closure in 1961, states the West Midlands Divisional Coal Board.

Orders Placed

Buell Dryers for Appleby-Frodingham

THREE rotary drum dryers are to be supplied by Buell, Limited, a subsidiary company of Edgar Allen & Company, Limited, steelmakers, of Sheffield, for the new development project of the Appleby-Frodingham Steel Company, branch of the United Steel Companies, Limited. The order was placed with Buell by the main contractors—Head Wrightson Iron & Steel Works Engineering, Limited—and the dryers, which will handle up to 130 tons of iron ore an hour, will be manufactured by the parent company.

Buell also announces a contract for a complete dust collecting installation for dealing with flue gases from a rotary kiln processing dolomite. It is also supplying to the same client a dust collection installation for a rotary kiln dealing with dolomite and serpentine. The two plants will handle 136,000 cu. ft. of gas a minute. The total value of the contracts is £150,000.

NORTH OF SCOTLAND Hydro-Electric Board has placed a contract valued at £300,000 with Mitchell Engineering, Limited, Peterborough, for the Nant section of its Loch Awe scheme.

WORTH £901,983, a contract has been placed with Aiton & Company, Limited, Derby, for the supply and erection of pipework, vessels, and ancillary equipment for the new geothermal project at Wairakei on the North Island, New Zealand.

EXPORT ORDERS totalling £15,000 are reported from the US, France, and Japan for the "Beryllium Monitor" manufactured by Winston Electronics, Limited, Shepperton (Middx), and developed by the UK Atomic Energy Authority.

CONTRACT has been signed between High Polymer & Petrochemical Engineering, Limited, and Strojimports & Polytechna, of Prague, Czechoslovakia, for a nylon tyre cord plant. The contract is worth approximately £1,000,000 and the equipment will largely be manufactured in the UK by Vickers-Armstrongs (Engineers), Limited.

CONTRACT for the construction of the first phase of Israel's first shipyard has been awarded jointly to Edmund Nuttall, Sons & Company (London), Limited, and the National Engineering Company of Haifa. The contract is worth about £600,000 and involves the building of two piers for repairing vessels up to 30,000 tons.

A £300,000 ORDER has been awarded to the British Insulated Callender's Cables, Limited, group, to supply and instal cables for the power, control, and lighting circuits for a new power station being constructed at Qatar. The installation work is being carried out in two stages by British Insulated Callender's Construction Company, Limited.

FIRST OF THREE scanning electron-probe X-ray microanalysers, worth over $50,000, was despatched last week by the Cambridge Instrument Company, Limited, to America. The equipment was ordered by the Illinois Institute of Technology; two others have been ordered by the United States Steel Corporation and the Crucible Steel Company of America.

AUSTRALIAN subsidiary of Boving & Company, Limited, water-power engineers, of London, W.C.2—Boving & Company (A.N.Z.) Pty., Limited—has secured an order for 108 electrically-operated butterfly valves to be installed in two ore-carrying vessels to be built by the Australian Shipping Board. The valves vary in size of bore from 3 in. to 16 in. and will control the ballasting and fuel systems of the ships.

TWO FURTHER ORDERS for the installation of steam generating plant in India have been received by Clarke, Chapman & Company, Limited, Gateshead. The first is a coal-fired bi-drum boiler unit for the extension of the Hussainsagar Power Station, Hyderabad, and the second is a specially designed bi-drum boiler unit, capable of being fired in four ways—by coal or oil, or by either fuel mixed with bamboo sawdust—for a new rayon silk making factory at Kerala.

MACHINERY for four new jute mills to be built in East Pakistan is to be supplied by UK companies. The largest portion of the £2,000,000 order has been won by James Mackie & Son, Limited, Belfast. Firms in the east of Scotland, which altogether have received £500,000 worth of the order, include Thomas C. Keay, Limited, and its subsidiary, Lawside Engineering & Foundry Company, Limited, Dundee, James F. Low & Company, Limited, Monifieth (Angus), and Giddings & Lewis-Fraser, Limited, Arbroath.

Spring Campaign to Boost Coal Sales

ONE of the main problems facing the coal salesman was the fashionable view that oil was the progressive fuel, said Mr. J. S. Williams, a deputy director-general of marketing, National Coal Board, at the annual dinner of the Mining Society of Coalville (Leics) Mining and Technical College last Friday. "The prestige campaign we have been running has done a great deal to restore confidence in coal," he said. "In the past two months we have disposed of 750,000 more tons of domestic coal than in the same period last year. For the year, the figures are bigger than for any year going back before nationalization, and we shall probably sell 10,000,000 tons more than last year."

These were encouraging trends, but the full effects of the recent price increase had not yet been felt. We would be faced with increased competition from oil.

"We are proposing next year to step out in the spring with a massive campaign to keep all the buoyancy we have now," Mr. Williams continued. "There will be a big summer price campaign, backed by another even bigger drive in the autumn. We are conducting this massive campaign because we believe in the long-term future of this industry, in which there will always be room for initiative and a rewarding career for the best brains of the country." He believed we were entering a new era of really aggressive selling.

Other speakers at the dinner included Mr. N. Fricker, marketing director of the East Midlands Divisional Coal Board, and Mr. N. R. Smith, Area general manager of the division's No. 6 Area. Mr. W. Unsworth, Area general manager of the No. 7 Area, presented awards for the best student papers to Mr. G. W. White and Mr. V. H. Sargent.

TWO PRODUCTION RECORDS were broken by Steel, Peech & Tozer, branch of the United Steel Companies, Limited, in the week ended November 5. The Templeborough melting shop produced 21,901 tons of steel from 191 casts, compared with the previous best of 20,901 tons from 186 casts, and the 10-in. and 14-in. cogging mills beat their previous best by 40 tons with a combined output of 896 tons.

6,000,000-ton Increase in Coal Sales

EXPORT MARKET ALSO PROSPERS

SALES of coal in this country so far this year are up on the same period of last year by nearly 6,000,000 tons. Announcing this in a speech at Harrogate on Wednesday, Mr. Alfred Robens, deputy chairman and chairman-designate of the National Coal Board, said that we were also "fighting our way back into the export market. We had sold over 1,000,000 tons more abroad." Mr. Robens who was speaking at the Combustion Engineering Association conference on "Getting the Best Out of Coal," said: "A month ago I expressed the opinion that the tide seemed to have turned for coal. Everything that has happened since then confirms me in that opinion."

Coal stocks, about which so much had been said and written, were being reduced. By the end of the year he would not be surprised if the stocks were reduced by something like 5,000,000 tons or more. "All this is an excellent start to the industry's recovery, but it is only a beginning," he said. Vigour, determination, and resourcefulness would be needed to keep up the necessary impetus. This meant a lively, energetic, and persistent sales campaign

Coal was a well tried and proved fuel. It was well understood—its vices, as well as its virtues, were known to all combustion engineers. There had been a steady improvement in the efficiency of coal burning.

Confidence in the Future

The NCB's confidence for the future rested on the fact that in most parts of the country—and certainly in most of the heavily industrialized areas—coal was generally the most economical fuel. Mr. Robens continued: "Our confidence also stems from the improvements in efficiency we are making in our operations. Productivity has increased since 1957 by 12 per cent. in coal mining: the average increase in British industry as a whole has been far less than that.

"Output a manshift in coal mining is now at the highest level in the industry's long history. And, of course, we shall not stand still. By 1965, no less than 80 per cent. of our output will be coming from new or reconstructed capacity. The miners will benefit from this, of course. Working conditions and safety will improve. Furthermore, costs of production will come down. They were reduced last year by 1s. 6d. a ton."

The task before the board was to make sure this continued. The price of coal had just been increased. Nobody regretted the need for this more than the board. But it could not go on running the industry in the red for ever and it had carried financial burdens which no business on purely commercial grounds would have faced. The boards' accumulated deficit since 1947 was £63,000,000. But for these charges, incurred by the board acting in the public interest, a price increase would not have been necessary.

They were determined that the price of coal should remain competitive, and all the efforts of management would be towards price stability. Price stability was essential if the coal industry were to hold its own in the face of competition from other fuels.

New Coal Preparation Plant for Blidworth Colliery

CONTRACT valued at approximately £440,000 for the construction of a coal preparation plant at Blidworth Colliery (Notts) has been awarded by the East Midland Divisional Coal Board to the Mitchell Engineering Group, Limited. The plant will be designed to clean run-of-mine coal from the Top Hard and Hazel seams at Blidworth at a maximum rate of 400 tons per hour.

The coals will be screened in the plant at either 8 in. or 6 in. and the oversize material will be hand sorted on a rotary picking table into hards and brights, rejected stone, and middlings. The large coal will be loaded directly into railway wagons while the large hand-picked middlings will be crushed and mixed with the coal passing through the primary screen. The coal below 8 in. or 6 in. will be screened at 1 in. and the large material separated in Ridley-Scholes dense medium primary and secondary baths, yielding clean coal, middlings, and dirt. The Top Hard and Hazel coals will be washed separately, the coal below 1 in. in size being washed in Baum jig washers. There will be no interruption of output during the construction of the new washery.

Year's Works in Hand for Machine-tool Makers

PRODUCTION in the machine-tool industry is still running at a high level and orders on hand are equivalent to more than a year's work. So far this year, orders on hand have increased gradually and at the end of August were only slightly below the record level at the end of 1956. During August, the figures for which have just been released, the value of deliveries to the home and export markets, at £6,990,000, was 35 per cent. more than in the same month last year.

The rate of growth in export deliveries during the month—just over a third of the total—continued to be faster than the rate of growth of deliveries on the home market. New orders worth £11,300,000 were placed during August, of which £8,400,000 were from UK customers. In the same month of 1959 new home orders amounted to £5,500,000. It is expected that the fall in demand from the motor and appliance industries will start to check the spectacular rise in orders which began in the Spring.

Appointments

Methods Engineer for Foseco

ON November 1, Mr. Alfred S. Godbehere joined Foseco International, Limited, a member of the Foundry Services, Limited, group, as a methods engineer in the international steel processes division.

MR. A. S. GODBEHERE

Mr. Godbehere, who until his appointment was general works manager for Jessop-Saville, Limited, will be in part responsible for the continuing development of Foseco products and processes throughout the 16 countries covered by the group and other countries where the group has agents. For some years Mr. Godbehere was a well-known referee at first division soccer matches.

Formerly field sales manager, Mr. B. J. DUNCAN has been appointed sales manager of W. C. Holmes & Company, Limited, engineers, of Turnbridge, Huddersfield.

Mr. WILLIAM E. OSGERBY, for the past two years blast-furnace superintendent at the Millom Works of the Millom & Askam Hematite Iron Company, Limited, has been appointed works manager.

Mr. HUGH A. PATTERSON has joined the trade sales department of the chemical division of Newton, Chambers & Company, Limited, Thorncliffe, near Sheffield, as representative in County Durham.

Works manager for C. G. Carlisle & Company, Limited, stainless steel manufacturers, of Sheffield, Mr. MAURICE W. BUTTLER has been appointed a technical sales representative for Atlas Steels (England), Limited.

Mr. E. W. WHIFFIN has been appointed senior sales representative in the Midlands area for the Soag Machinery Company, London, S.E.11, in succession to Mr. J. M. Churchman, who has taken up a post in Australia.

Mr. DEREK R. R. DICK, a partner in W. S. Atkins & Partners, consulting civil engineers, of London, S.W.1, has been seconded to Richard Thomas & Baldwins, Limited, to work as construction manager at the Spencer Steelworks, Llanwern (Mon).

Referring recently to the appointment of Mr. J. Hobley, manager of Stanley Colliery, as manager of Woodside Colliery, Ilkeston (Derbyshire), we should have stated that he has been succeeded by Mr. W. E. BRIDGETT who will now be manager of both Mapperley and Stanley Collieries.

Until recently manager of the repair department of Wm. Doxford & Sons, Limited, Mr. W. C. CANTES has joined the Humber Graving Dock & Engineering Company, Limited, as technical manager. He served his apprenticeship with R. & H. Green & Silley Weir, Limited, and after the war joined Sulzer Bros. (London), Limited. He joined Wm. Doxford in 1954.

Mr. D. KENNEDY, formerly manager of Cambois Colliery, Blyth (Northumberland), has been appointed resident mining engineer in the Northern (N&C) Division of the National Coal Board, for the Mining Engineering Company, Limited, Worcester. He succeeds Mr. W. Nelson who was recently appointed to represent the company in the North-Eastern Division.

Mr. C. R. HUGHES, who has been appointed No. 3 (South-East Durham) Area chief engineer, started his career with the Wingate Coal Company, Limited, and in 1946 was appointed electrical engineer to Shipley and Ilkeston Collieries, Limited (Derbyshire). He returned to the Durham Division in 1949 as a Group chief mechanical and electrical engineer and in 1956 became No. 3 Area mechanical engineer.

The mining plant division of F. Taylor & Sons (Manchester), Limited, a member of the Steel group of companies, announces the appointment of Mr. T. H. B. LAWTHER as a technical sales executive. An experienced mining engineer, Mr. Lawther has spent many years working in metalliferous mines in Spain, Egypt, and British Guiana, and was until recently manager for the African Manganese Company (Mines Management), Limited, at its new manganese mining project in British Guiana.

Mr. CLIFFORD J. SMITH has been appointed manager of the filter division of Eimco (Great Britain), Limited, manufacturers of rotary vacuum and pressure filters, etc., of Gateshead, in succession to Mr. Charles E. Silverblatt, who will remain in a consultative capacity until his return to the US early next year. Mr. NEVILLE A. SATCHWELL, formerly chief draughtsman of the division, has been appointed project manager to co-ordinate the activities of the filter division under Mr. Smith. Mr. EDWARD W. LAIRD becomes chief draughtsman.

Brussels Conference on Tin and Tin-alloy Coatings

"ELECTRODEPOSITION and the Applications of Tin and Tin-alloy Coatings" was the theme of the 10th annual Journée de l'Etain held in Brussels on Tuesday. Delegates to the conference included metallurgists and technologists from leading British and continental institutions and companies.

Papers were presented by Mr. R. M. Angles, head of the electrodeposition laboratories of the Tin Research Institute; Mr. C. J. Thwaites, assistant chief metallurgist of the Tin Research Institute; M. J. Browet, head of the laboratories of Sabena, and M. Riesser, Société Minerve de France.

New Representatives of Hollybank Engineering

RECENTLY appointed sole representatives in the Scottish, Northern (N&C), and Durham divisions of the National Coal Board for the entire range of supports, junctions, spacers, and other mining equipment made by Hollybank Engineering Company, Limited, is A. Bond & Company (Edinburgh), Limited.

Orders should be addressed to Hollybank Engineering and all inquiries relating to the Scottish Division should be made to 87, Shandwick Place, Edinburgh 2, (telephone: FOUntainbridge 1645), while inquiries relating to the other two divisions should be directed to the manager of A. Bond, Mr. C. W. Coan, at St. Nicholas Chambers, Newcastle-upon-Tyne 1, (telephone: Newcastle 2-2906).

STANTON IRONWORKS COMPANY

Appointments to the Board

MR. C. G. MACKIE
Joint Deputy Managing Director

MR. G. R. BUCKLEY
Joint Deputy Managing Director

A NUMBER of directorial appointments have been announced by the Stanton Ironworks Company, Limited, near Nottingham. Mr. G. R. Buckley and Mr. C. G. Mackie, previously assistant managing directors, have been appointed joint deputy managing directors of the company, and Mr. E. M. Summers, Mr. Leslie Rawlins, and Mr. C. H. Wilson have joined the board.

Mr. Buckley, who was educated at the King Edward VII School, Sheffield, was apprenticed to the Staveley Coal & Iron Company, Limited, and appointed assistant production manager for the Staveley foundries in 1931. Five years later he joined Dorman Long & Company, Limited, Middlesbrough, as foundry manager. He came to Stanton Ironworks in 1940 and was appointed manager of the Holwell Foundry.

A number of appointments followed—as general manager, Cochranes (Middlesbro') Foundry, Limited, a Stanton subsidiary; general manager, Stanton foundries; general manager, foundries and spun plants; general works manager, and a director of the company (1955). He was appointed assistant managing director (works) the following year.

He has been a member of the Institute of British Foundrymen since 1937 and is a member of council of the British Cast Iron Research Association.

Mr. Mackie was elected to the board in 1955 and became assistant managing director (commercial) the following year. He had been, for three years previously London manager for Stewarts and Lloyds, Limited. He joined S&L in 1937, served throughout the war, and on his return was appointed to the central tubeworks office in Stewarts and Lloyds' Glasgow office. In January, 1951, he went to London as personal assistant to the London manager whom he later succeeded.

Mr. Summers was educated at Kettering Grammar School Wellingborough Technical Institute, and Leicester College of Technology. He joined the Wellingboro' Iron Company, Limited, in 1930 and Stanton Ironworks in 1932 when the Wellingboro' Iron Company was acquired by Stanton. After a period at Holwell and Stanton he became chief chemist at Wellingboro' and later personal assistant to the furnaces' general manager at Stanton. He was appointed blast-furnace manager at Holwell in 1940, general superintendent in 1949, furnaces' general manager of Stanton Ironworks in 1953, and general manager (iron production) in 1958.

He is also a director of Stewarts and Lloyds Minerals, Limited, and Bowne & Shaw, Limited, a member of the council of the British Iron and Steel Research Association, and chairman of the Ironmaking Panel.

After having travelled extensively in South America, Europe, and the Middle East. Mr. Rawlins joined Stanton Ironworks in 1931 with a view to developing the oversea business of the company. At the outbreak of the war he took charge of a special department set up to handle the company's business with

MR. C. H. WILSON

MR. L. RAWLINS

MR. E. M. SUMMERS

the Government departments involved in the war effort.

After the war his main interests were, once again, in the export field, until 1954 when he was appointed commercial manager, and his interest then extended to both the home and oversea selling organization of the company. Mr. Rawlings, who is 55, is a native of Nottingham. He is a member of the Institute of Export and a director of Stanton Pipes (Canada), Limited.

Mr. Wilson, who is the son of the late Mr. P. H. Wilson, deputy managing director of Stanton until his death in 1954, was educated at Rossall School and joined the company as a special apprentice, working both in the foundries and engineering shops. Subsequently he entered the British Foundry School (now the National Foundry College), and after obtaining the diploma joined the Britannia Iron & Steel Company, Limited, as assistant foundry manager, eventually taking charge of the foundry.

For a period during the early part of the last war he was assistant chief planning engineer at Boulton Paul Aircraft, Limited, and later went out to India to construct and start up a spun iron pipe plant at the Kulti Works of the Indian Iron & Steel Company, Limited. On his return he worked for a short period in the research and technical development department of Stewarts and Lloyds, before taking up an appointment as foundry development engineer at Stanton in 1947.

He was appointed general manager of Cochranes (Middlesbro') Foundry in 1949 and became a director of that company in 1956. In October, 1958, he undertook additional responsibilities when he was appointed general assistant to Mr. Buckley.

Mr. Wilson is immediate past president of the Institute of British Foundrymen, a governor of the National Foundry College, a Liveryman of the Worshipful Company of Founders and a Freeman of the City of London.

British Institute of Management's New Chairman

NEW chairman of the British Institute of Management is Mr. Hugh P. Barker, chairman and managing director of Parkinson Cowan, Limited. The son of a well-known consulting mechanical engineer, Mr. Barker served an apprenticeship with the Otis Elevator Company, Limited, and at the age of 21 went into business on his own account, making electrical heating apparatus. In the 1930s he worked in partnership with his father and joined the board of Measurement, Limited, a Parkinson Cowan subsidiary, in 1938.

Shortly before the end of the war he was released by the Minister of Aircraft Production, where he was Deputy Director of Instrument Production, to return to Parkinson Cowan as engineering director. His appointment as managing director followed quickly and he was elected chairman in 1956. He is a member of a number of learned societies and a founder member and Fellow of the British Institute of Management.

W. & J. LAWLEY, LIMITED, brass and iron founders, of West Bromwich (Staffs)—Group net profit for the year ended July 31, 1960, was £49,223 (£45,200) and it is proposed to make a one-for-five scrip issue. Dividend for the year is 30 (25) per cent.

Inco to Triple Iron-ore Recovery Plant

IMMEDIATE steps are to be taken by the International Nickel Company of Canada, Limited, to triple the capacity of its iron-ore recovery plant at Copper Cliff, Ontario. The expansion, states the chairman, Mr. H. S. Wingate, is due to be in full operation by 1963 and will entail a total estimated capital outlay of $50,000,000, of which $10,000,000 is scheduled for next year.

MR. H. S. WINGATE

Using a process invented by the company's research staff and successfully established in its existing iron-ore recovery unit, he says, the expanded plant will treat 1,200,000 short tons per year of nickeliferous pyrrhotite high in iron content. The process involves solid state pyrometallurgical operations, and the removal of nickel by atmospheric pressure leaching in high-capacity units of novel design.

The diversion of this large quantity of pyrrhotite to the expanded iron-ore recovery plant will effect a 40 per cent. decrease in the tonnage of material which otherwise would have to be handled by the nickel section of the Copper Cliff smelter. The change in practice in the nickel smelter will result in important smelting economies and provide a basis for further major advance in nickel extractive metallurgy.

In the iron-ore recovery plant, capacity for the output of iron-ore pellets containing 68 per cent. iron will be raised to 900,000 short tons per year and more nickel will be recovered from the same amount of pyrrhotite than is now possible in the nickel smelter.

Furnace Builders Confer

MOST of the leading furnace manufacturers in Great Britain were present at a conference of the Society of Furnace Builders held in Jersey from October 15-17.

Discussions were held on the future of the industry in relation to industrial trends and developments, the use of modern techniques such as closed circuit television, the training of future personnel, and the association of the society with research organizations, particularly with the British Iron and Steel Research Association in its investigations into the operation of forge furnaces.

At the official dinner, the chairman, Mr. C. G. Pettit, on behalf of the members, made a presentation to the new president, Mr. H. Southern, in appreciation of his work for the society from the time he took office (as chairman) 16 years ago.

SPENCER GEARS, LIMITED, Leicester—In addition to the 25 per cent. dividend a 2½ per cent. bonus is to be paid for the year ended June 30, 1960. A one-for-four rights issue is proposed for next January. Group net profit rose to £15,327 from £14,550, after tax of £12,161 (£8,170).

ON THE PNEUMATIC PROCESSES OF *Converting High-phosphorus Iron*

In our May 4, 1956, issue Dr. P. Coheur described the development of the basic-Bessemer process in Belgium and Luxembourg. The achievements at that time were truly remarkable, but Dr. Coheur's recent wide review of the subject, published below in abridged form, reveals a rapid development and extension of the process to high-phosphorus irons that has fulfilled, if not surpassed, all expectations. The paper was presented at the 1960 annual meeting of the Association of Mining Electrical and Mechanical Engineers.*

FIG. 1.—NEW BASIC-BESSEMER SHOP OF S.A. HADIR, DIFFERDANGE, GRAND DUCHY OF LUXEMBOURG. MONTHLY PRODUCTION, 80,000 TONS. FOREGROUND: MIXERS OF 1,300 TONS EACH. MIDDLE: DESULPHURIZATION WITH TEA-POT LADLES. BACKGROUND: THE CONVERTERS (FOUR, THE CAPACITY BEING 50 TONS).

Basic-Bessemer Process During the Period 1938-1958

BEFORE the war and taking as a reference the year 1938, the basic-Bessemer process was carried out exclusively with atmospheric air and was based on an operational technique of 70 years' practice. A conventional steel plant had a monthly output of approximately 50,000 to 60,000 tons, using five or six 20-ton converters, or four or five 25-ton converters.

In adjusting their steel plants to the expanding trends of steelmaking and to the post-war market, the European iron and steel makers who previously had utilized the basic-Bessemer process, maintained their faith in that technique: they modernized or enlarged the existing basic-Bessemer plants or decided to build new basic-Bessemer installations.

The result was that, during the last 20 years, the basic-Bessemer steel production increased, not only in absolute, but also in relative value. This tendency will still be more marked in the course of the years to come. According to plans in Belgium, France, Germany, Luxembourg, and the Saar, in the course of 1959-62, the production capacity of basic-Bessemer steel should increase with respect to 1958, by 15 per cent., against 5 per cent. for open-hearth steels.

Finally, as far as all the above countries are concerned, the percentage of basic-Bessemer steel in the total production capacity should approach 56.6 per cent. in 1962 *versus* 55.4 per cent. in 1958, while the percentage of open-hearth steel should decrease from 36.2 to 33.5 per cent. in the next three years. This tendency may also be observed in Great Britain, where in 1959, a third company has put into operation a new basic-Bessemer plant using exclusively the oxygen-steam process, the yearly capacity of which is 600,000 tons.

To sum up, the use of atmospheric air has been decreasing since 1948 and, at the present time, is less than 50 per cent. of the total production of basic-Bessemer steel. The size of the converters tends to increase, the most

* Dr. P. Coheur is a professor at the University of Liège and director of the Centre National de Recherches Métallurgiques, Section de Liège.

TABLE 1.—*Standard Analyses and the Standard Deviation of Converter Steels Blown with Air, Oxygen-enriched Air, and $O_2 + H_2O$ Mixtures.*

Process.	N_2, per cent.		P, per cent.		S, per cent.	
	Range.	Standard deviation.	Mean or range.	Standard deviation.	Mean or range.	Standard deviation.
Conventional (air blast and scrap)	0.0090 to 0.0120	0.0025	0.045	0.012	0.035	0.007
Oxygen-enriched air	0.0050 to 0.0080	0.0010 to 0.0015	0.025 to 0.045	0.006 to 0.012	0.020 to 0.035	0.005 to 0.007
$O_2 + H_2O$	0.0020 to 0.0025	0.0005	0.020	0.006	0.020	0.005

current size found in new plant being 45-50 tons, and the largest, 75 tons. A conventional steel plant now comprises four to five vessels of a 45-50 ton capacity, producing 100,000 to 120,000 tons per month (Fig. 1). These new plants usually have provision for using either enriched air or O_2+H_2O mixtures, in addition to ordinary air blowing.

The three leading techniques of bottom blowing currently used in Europe are:— Atmospheric air; oxygen-enriched atmospheric air; gaseous mixtures essentially composed of O_2+H_2O.

Atmospheric Air Process.—Up to now, half a billion metric tons of low-carbon steels have been produced using atmospheric air; these steels contain (Table 1) on an average:—N_2, 0.0090 to 0.0120 per cent; P, 0.045 per cent; S, 0.035 per cent. Also high tonnages of medium-carbon steels have been produced, such as steels for rails (C= 0.45 to 0.60 per cent.; P=0.045 per cent.; N_2= 0.0120 per cent.).

Some low-alloy steels have also been produced, such as steels for transformers containing, for example, 1 to 3.5 per cent. Si and the wattage loss of which is equal to that of the open-hearth or electric steels. Also steels containing 1 per cent. C and 1 per cent. Cr, intended for the fabrication of crushing elements.

Blowing with atmospheric air is characterized, in contrast to the classical open-hearth and electric processes, by lower initial and operational expenses and by a much shorter process time (blowing time: 1 to 3 ton/min., according to the capacity of the converter). However, it requires a hot metal of which the phosphorus content must be between 1.6 and 2.3 per cent. and the silicon content must be lower than 0.5 per cent. Furthermore, the amount of scrap that can be used is relatively small and is directly dependent upon the composition of this hot metal and particularly upon the silicon and phosphorus concentrations.

Oxygen-enriched Air Process.—As soon as the steelmaker could obtain from tonnage-oxygen plants, quantities of oxygen at a sufficiently low price, he found the opportunity to enrich atmospheric air with oxygen. Enrichment, practised on a very large scale, is approximately 25 to 40 per cent. Its main results are a reduction by about 20 to 25 per cent. of the nitrogen content of the steel produced and, to a smaller extent, the phosphorus content; an increase in the scrap consumption (220 to 330 lb. additional per ton of hot metal); a decrease in the process time (30 to 40 per cent.); an increase in the production capacity (10 to 20 per cent.).

Oxygen-steam Process.—Together with the spectacular development of the flat products market which arose immediately after the last war, the basic-Bessemer steelmaker was forced to make new grades of steel having a higher cold ductility than he could obtain using atmospheric air or oxygen-enriched air. To this end, it was necessary to lower considerably the nitrogen and phosphorus content of steel. The steelmaker thus had recourse to the gaseous mixtures O_2+H_2O combined with a double-slag practice (Figs. 2 and 3). The steel produced by this method contains about N_2, 0.0020 per cent.; P, 0.020 per cent.; S, 0.020 per cent.; and has cold-ductility properties at least equal to those of open-hearth steels. Furthermore, it is possible to attain a very low carbon con-

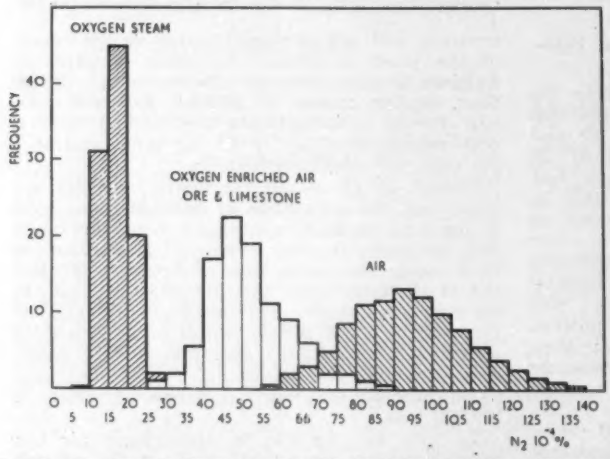

FIG. 2.—FREQUENCY DIAGRAMS FOR N_2 CONTENT OF STEELS BLOWN WITH AIR, OXYGEN-ENRICHED AIR, AND OXYGEN-STEAM MIXTURES, BASED ON DATA OF PRODUCTION OF TWO STEEL COMPANIES DURING THE LAST THREE MONTHS OF 1959.

TABLE 2.—*Comparative Performance Figures for Air, Oxygen-enriched Air, and $O_2 + H_2O$ Bottom-blowing Processes.*

	Scrap, per cent. (a)	CaO per cent.	Oxygen consumption cu. ft. per ton of iron.	Rate of conversion, ton/min.	Quantity of dolomite, lb./ton.	Life of bottoms (b)	Life of linings (b)
Conventional (air blast and scrap)	3 to 9	12 to 15	—	1 to 3	15 to 22	60 to 100	250 to 500
Oxygen-enriched air	15 to 20	2 to 15	810	3 to 5	15 to 22	60 to 100	250 to 500
$O_2 + H_2O$	3 to 9	12 to 15	1,430	3 to 5	16 to 24	50 to 70	250 to 500

(a) As percentage of liquid iron.
(b) Number of heats.

tent (*e.g.*, 0.03 per cent.). The cost of this process is slightly higher than that of the two former processes, for reasons which can be seen in Table 2[1, 2].

Special Blowing Processes using Bottom-blown Converters

Dual Process.—The course of the metallurgical reactions occurring in a basic bottom-blown converter is more particularly characterized by the fact that the carbon elimination precedes that of phosphorus, whatever the type of blowing: atmospheric air, enriched air, or $O_2 + H_2O$ mixtures. This results from the fact that phosphorus elimination is carried out in two stages, *i.e.*:—

$$2P + 5O = P_2O_5 \quad (1)$$
$$P_2O_5 + 4\,CaO = 4\,CaOP_2O_5 \quad (2)$$

and that the second reaction, in practice starts only from the moment when the slag becomes liquid (that is to say, the moment when the bath temperature is sufficiently high).

At the end of the blow, the carbon content is approximately 0.01 to 0.02 per cent. and that of phosphorus 0.015 to 0.025 per cent. if the double-slag technique is used. In spite of the low carbon contents, the metal is not "over-oxidized." The oxygen concentration, indeed, lies between 0.045 and 0.095 per cent. while the Vacher and Hamilton relation gives the value 0.125 to 0.250 per cent. (see Fig. 4). This difference may be explained by the fact that the carbon monoxide is below 1 atmosphere. Moreover, if one follows the evolution of carbon and oxygen from the converter to the finished products, one obtains the curves in Fig. 5. All the finished product values are situated below the Vacher and Hamilton curve.

In order to hasten dephosphorization and prevent an exaggerated decarburization of the metal bath, diverse proposals have been advanced. All of them aim at the liquefaction of the slag at an earlier stage.

One among them, already proposed in 1926 by H. Bansen[3], consists in increasing the amount of heat supplied to the metal bath by burning a portion of the escaping CO gas. This is most easily carried out with an oxygen lance introduced through the top of the converter.

In 1955-56, at the Espérence-Longdoz Works, a number of heats were made by blowing enriched air through the bottom of the converter while simultaneously blowing additional oxygen through the top in order to burn the CO. However, under the operational conditions obtaining it was not possible to reach the aim we were considering: dephosphorization was not faster and there was no change in the carbon content of the bath at the end of the blow. On the other hand, the process has the advantage that it melts additional scrap. This quantity varies from 0.6 to 0.75 lb./cu. ft. of oxygen blown through the top,

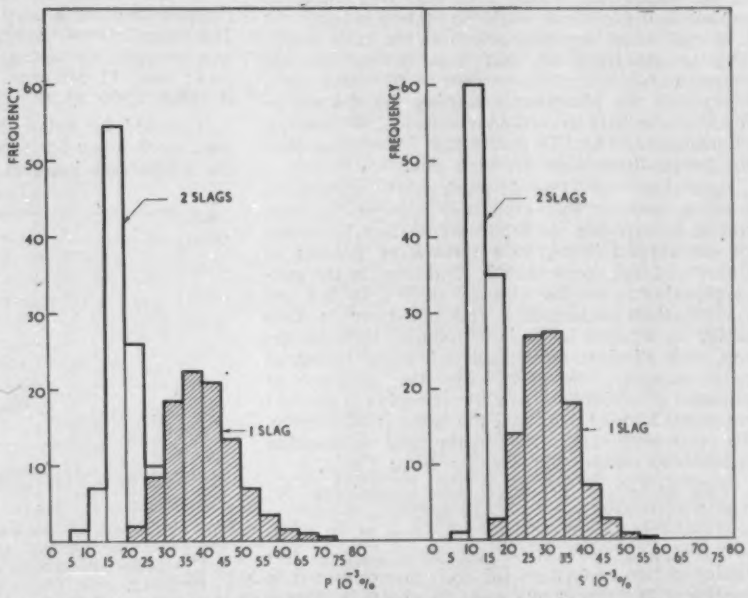

FIG. 3.—FREQUENCY DIAGRAMS OF PHOSPHORUS AND SULPHUR CONTENTS WHEN USING A SINGLE OR DOUBLE SLAG TECHNIQUE.

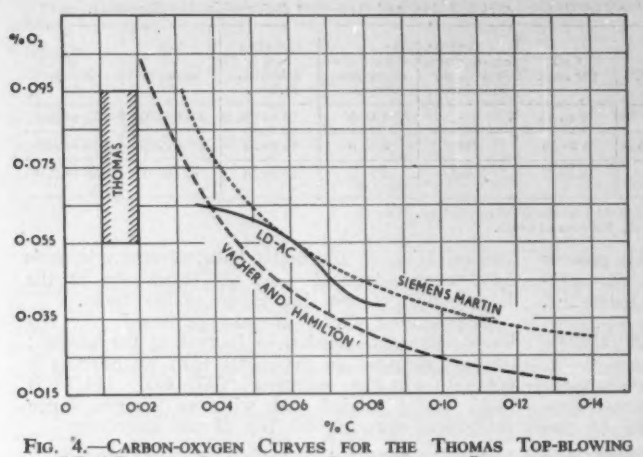

FIG. 4.—CARBON-OXYGEN CURVES FOR THE THOMAS TOP-BLOWING (LD-AC) AND OPEN-HEARTH PROCESSES IN RELATION TO THE VACHER AND HAMILTON CURVE.

against 0.30 to 0.38 lb./cu. ft. of oxygen blown through the bottom.

These figures correspond exactly to the heat resulting from the combustion of CO with the oxygen blown through the lance. We shall come back later to this process.

Phœnix-Lance.—When the conversion is carried out by means of atmospheric air or oxygen-enriched air, it appears that the nitrogen percentage of the metal bath varies with time and increases rapidly at the moment when the carbon is relatively low and when dephosphorization becomes faster. This results from the fact that, during the last minutes of blowing, the oxygen of the blast combines with the phosphorus causing the gas escaping from the bath to contain a considerable quantity of nitrogen. The CO percentage is very low and the temperature is on the high side.

Specialists at Phœnix-Rheinrohr[3], Germany, tried to prevent this abnormal nitrogen concentration by carrying out dephosphorization by means of an oxygen lance, in a three-stage process as follows. First, conversion is conducted in the conventional way to an average of 0.1 to 0.4 per cent. carbon reduction. The converter is then tilted, an oxygen lance is introduced through the top, and elimination is achieved using industrial pure oxygen. In this way, the pick-up of nitrogen is avoided. When the phosphorus content reaches 0.2 to 0.3 per cent., the lance is withdrawn, the converter is raised again and conversion finished by bottom blowing for up to 1 min.

This technique produced steel containing N_2, 0.0020 to 0.0050 per cent., P, 0.025 to 0.030 per cent., and achieved a desulphurization of 70 to 80 per cent. The Phœnix-Rheinrohr company has equipped two converters for this process, but it is too early to express any opinion about its future exploitation.

Top-blowing Processes

LD Process.—As far as phosphorus (1.5-2 per cent. P) and semi-phosphorus (0.6-1.5 per cent. P) hot metal is concerned, the LD process in its classical application, was faced with difficulties which had to be met by special blowing techniques.

The first technique to consider is that developed by the Société des Aciéries de Pompey[4] in collaboration with the specialists of Vöest, Linz. Its operating features are as follow:—

(*a*) The retention in the converter of slag from the previous operation. To achieve this the converter is provided with a tapping hole; (*b*) charging of hot metal, scrap, and a certain amount of lime; (*c*) blowing of oxygen by means of a lance of the LD type, until the phosphorus and carbon contents of the metal bath are, respectively, about 0.2 and 0.7 to 1.5 per cent., according to the grade of the steel required (0.7 per cent. carbon for soft or extra-soft steel, 1.5 per cent. for mild steel); (*d*) removal of the slag which, at this stage, contains about 20 to 25 per cent. P_2O_5 and less than 10 per cent. FeO; (*e*) charging of a certain amount of sized lime together with a certain amount of scrap; (*f*) finishing of the blowing operation when the required carbon content is attained.

Pompey has achieved over 1,000 heats in a 20-ton converter and has produced chiefly rimmed steels of a very good open-hearth quality. The approximate consumption as percentage of iron charged is:—Scrap, 20 per cent.; ore, 1.5 per cent.; lime, 11 per cent. The oxygen consumption is about 1,900 cu. ft. per metric ton of iron.

It should be noted that the present equipment used by Pompey for top blowing does not give all the advantages inherent in the operation and the

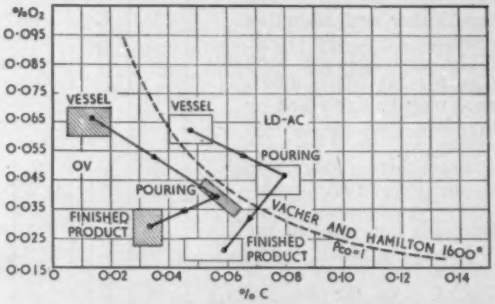

FIG. 5.—COURSE OF THE CARBON AND OXYGEN CONTENTS (1) IN THE VESSEL AT THE END OF THE BLOW, (2) WHEN POURING, AND (3) IN THE FINISHED PRODUCT, FOR OXYGEN-STEAM AND LD-AC PROCESSES. (HATCHED AND OPEN AREAS, RESPECTIVELY.)

company is therefore planning a modern installation which will enable it to make crushed lime additions continuously during blowing. In this process dephosphorization and decarburization take place simultaneously, the desulphurization percentage is high and the mechanical properties of the steel are excellent. The slag remaining in the converter at the end of the blow, and which is utilized in the first phase of the subsequent operation, contains 6 to 8 per cent. P_2O_5 and 25 to 30 per cent. FeO. The re-use of the slag is not metallurgically required, but from an economic point of view, it has a certain advantage. It permits, in fact, the reduction to a minimum of the iron losses and the consumption of oxygen and lime. Regarding the thermal balance of the operation, there is, on the credit side, the sensible heat of the slag and the fact that the quantity of lime used is less. On the debit side, there is the heat of reduction of the FeO content of the slag.

The present conditions of exploitation of the process (interrupted service and abnormal low temperature of the hot metal) do not yet permit the thermal balance to be established accurately, but the development of this process on an industrial scale during 1960 should make this possible.

LD-AC Process.—The next process to consider is that of injecting pure oxygen containing powdered lime through a lance on to the surface of the bath. This technique has been studied on one hand by IRSID in the Denain steelworks in France[5] and, on the other hand, quite independently, by the specialists of ARBED and CNRM working in close collaboration[6].

The results obtained by ARBED/CNRM, which led to the LD-AC process, are discussed here. The plant for this process and the early results obtained have been described by Metz[6] and the chemistry of the process has been outlined by Decker[7]. So far, more than 2,000 heats achieved in a 26-ton converter and representing more than 50,000 tons of steel have been produced.

Special characteristics of the process are:—(*a*) Foaming of the slag can be provoked, adjusted, and controlled within narrow limits. This is most advantageous, for controlling the conversion, reducing the projections, and increasing the metallic yield; (*b*) dephosphorization and decarburization take place simultaneously, and thus the state of oxidation of the metal at the end of refining is controlled, as in the open-hearth process, through the carbon activity of the metal bath. Fig. 4 indicates a mean curve relating to a series of 200 LD-AC consecutive heats. The carbon-oxygen curve is located somewhere below that of the open-hearth steel and even approaches the Vacher and Hamilton curve when the carbon content becomes less than 0.05 per cent. The course of the carbon and oxygen contents of the bath, when pouring and in the finished product in the LD-AC process is shown in Fig. 5; (*c*) with 95 per cent. oxygen, the nitrogen content of steel is approximately 0.0050 per cent., while with oxygen of 99.5 per cent. purity, the nitrogen content of steel is 0.0025 per cent. Desulphurization is particularly high, ranging up to 70 per cent., steels of 0.015 to 0.020 per cent. sulphur being obtained without difficulty (Fig. 6).

Phosphorus content of steel can be easily brought within the range 0.010 to 0.020 per cent. by operating with two calcic slags. The first one is removed when the phosphorus content of the bath is between 0.100 and 0.200 per cent. This two-slag technique is identical to that used in the basic-Bessemer operation. In the case of the LD-AC process, however, the carbon content of the bath at the time of the first slag removal is 0.7 per cent., while in the basic-Bessemer process it is 0.02 per cent. Furthermore, the second slag, when operating with a tapping hole, may be kept in the converter and used in the following operation as in the LD process.

To estimate the cost of the process (converter without tapping hole), the figures given in Table 3, together with the following facts, are considered:—(*a*) The yield of manganese used for deoxidation is high, being about 75 per cent. (*b*) The refractory linings of the converter are subjected to more severe conditions than in the case of bottom blowings. With the conventional rammed dolomite linings, the life of refractories, although reduced by approximately 35 per cent., give economic operation. This life could be increased by using magnesite linings.

On the above data and assuming that the ratio, cost of pig-iron/cost of scrap, is above 1.7, it seems that as far as the

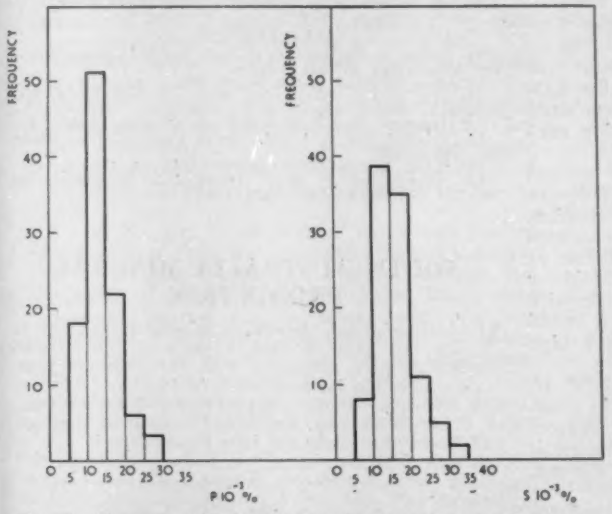

FIG. 6.—FREQUENCY DIAGRAMS FOR PHOSPHORUS AND SULPHUR IN STEEL PRODUCED BY THE LD-AC PROCESS.

TABLE 3.—*LD-AC Process Performance Figures.*

Liquid iron, lb./ton* of steel	1,851.28
Scrap, lb./ton of steel	575.43
Iron ore, lb./ton of steel	17.68
Iron yield, per cent	89.63
Lime, lb./ton of steel	210.98
Oxygen, cu. ft./ton of pig-iron	2,100.00
Desulphurization, per cent	68.00
Blowing time, sec./ton of steel	41.00

* Metric tons.

Belgian and Luxembourg companies are concerned, the operational costs of the LD-AC process are very similar to those encountered in the bottom-blown basic-Bessemer process using O_2-enriched air.

To determine the mechanical properties of the steels, numerous studies not only in the laboratory, but also of industrial applications have been made.

These studies dealt with soft steels (C 0.06-0.08 per cent.) and mild steels (C 0.15-0.20 per cent.), rimmed, semi-killed, or killed steels. Special consideration was given to cold ductility (0.8-1.2 mm. sheets) ($\frac{15}{32}$ to $\frac{47}{64}$ in.), transition temperatures (12 and 15 mm. sheets) ($\frac{1}{32}$ to 1.5/32 in.) and inclusions. Steels having a higher content in carbon were also studied. Steels obtained by the LD-AC process were compared with those obtained by the oxygen-steam processes, Kaldo, open-hearth, and electric. It was concluded that, provided the chemical analyses—as well as the rolling technique—are the same, which is always possible, the LD-AC steels offer mechanical properties at least equal to those of the steels produced by the other processes.

The results quoted above show that the LD-AC process, new though it is, has already gained a great deal of success in Europe. Several companies in Belgium, France, Germany, Great Britain, and Luxembourg have decided to use the process, one plant being already in operation.

Future Developments

Research is in progress with the objective of extending the industrial application of the LD-AC process. One research aims to increase scrap consumption and two techniques are being considered.

The first one consists in increasing the amount of combustible elements of the system. This can be done by means of solid fuel additions which, by combustion with the oxygen of the lance, supplies an important amount of heat. Instead of adding solid fuel, one could employ liquid or gaseous fuel by providing the oxygen lance with an additional tube, concentric or centric. It would be in fact a special burner working with a high excess of oxygen.

The second technique is the proposal of H. Bansen, mentioned above, which consists in burning, by means of an additional supply of oxygen, the CO leaving the metal bath. This technique is about to be utilized by ARBED, which, to this end, will use a special lance composed of two concentric tubes. The central tube will be used for the introduction of oxygen and powdered lime. The outer tube will be used for providing the necessary oxygen for the combustion of the CO.

Another research deals with the application of the LD-AC process to semi-phosphorus hot metal or to non-phosphorus hot metal. There is ample evidence that the LD-AC process can also be used for those types of hot metal. It would result in easier control, higher flexibility of the operation, and, possibly, lower production cost. Small-scale experiments have been carried out and one steel plant is actually equipping itself to start operating the method during the current year.

Conclusions

In Europe the pneumatic processes of converting high-phosphorus pig-irons show a continual increase in application, not only from the point of view of absolute tonnages of steel produced by these processes, but also the percentage of the total steel production.

Conventional bottom blowing with atmospheric air is still used by many companies since the quality of steel produced is perfectly suitable to numerous applications and the operational costs are the lowest. However, there is a growing use of oxygen-enriched air or oxygen-steam mixtures. This results mainly from the structure of the price of pig-iron and scrap and from the necessity for some steelworks to produce steels having high cold-ductility properties.

The processes of conversion of high-phosphorus hot metals by top-blowing (LD and LD-AC processes), gives steel of equivalent quality to that of the $O_2 + H_2O$ or open-hearth steels. Their spectacular development springs from their good economics, flexibility in treating semi- or low-phosphorus hot metal, and making types of steel difficult to make in bottom-blown converters.

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SOUTH AUSTRALIA MINERAL PRODUCTION

VALUE of South Australian mineral production in the last year reached a peak of £26,300,000, £3,000,000 more compared with the previous year. Main production increases were in iron ore, dolomite clay, and opal. Iron-ore output rose to 3,400,000 tons, of which 70 per cent. was mined from Iron Monarch and 30 per cent. from the Iron Baron deposit.

Search for new deposits is being actively carried on by the Government. Deposits at Tarcoola and Braemar are still under consideration, and on Eyre Peninsula, aerial geophysical search, ground mapping, and drilling are in progress.

THE COAL INDUSTRY—
Now and Tomorrow

Position of the East Midlands in the National Picture

Changing circumstances in the coal-mining industry following nationalization and the likely trends for the future were reviewed by Mr. W. L. Miron, chairman designate of the East Midlands Divisional Coal Board, in an address to the Midland Branch of the National Association of Colliery Managers on October 17, 1960. The speaker compared the events taking place in his division with the national picture and outlined the problems facing the East Midlands Division.

by W. L. Miron

IN assessing the circumstances and conditions of the coal-mining industry, particularly as they affect the East Midlands Division, today and tomorrow, it is extremely difficult to divide any appreciation into exact phases of time. Although statistics, tasks, and objectives are compiled, imposed and planned on an annual basis, there is no magic in the date, December 31 of one year, as against January 1 the next. Only at midnight, December 31, 1946, due to parliamentary magic, was there in the coal industry any clean-cut, identifiable change of circumstances. Thereafter, and hereafter, one season, one year, runs into another. Nevertheless, there must be some basis on which to work and if we are to look at a continuing "present" state of affairs, if we are to try to assess the state of affairs of "tomorrow," we must first recapitulate what happened "yesterday."

On this basis, therefore, this paper is divided as follows:—(1) "The day before yesterday"—the first 10 years of nationalized ownership; (2) "Yesterday"—the following three years; (3) "Today"—the year 1960 and the immediate winter facing us; (4) "Tomorrow"—the remainder of 1961; (5) "The day after tomorrow"—1965 to 1970.

For the first 10 years after nationalization, up to the end of 1956, the coal industry stood supreme. It is doubtful if then, as now, it received any measure of reverence, but conspiring forces were operating against it. The demand for coal was insatiable. To eke out home production an extensive import programme had to be undertaken. There was never enough coal to go round. For the next three years, the demand declined so that by the end of 1959 it was running at some 33,000,000 tons a year less than in 1956.

During those three years, the NCB took successively a number of measures, many of them still continuing, to cope with a situation of unexpected and unforeseen diffculty. Among those measures were the control of non-operational and administrative expenditure; an increasingly intensified campaign for the improvement of colliery results; at the end of 1957, a large coal drive; restrictions on recruitment; suspension of Saturday working early in 1958; a number of planned closures; restrictions on open-cast working; reduction of mid-week and weekend overtime; stricter control of intake, issue, and consumption of stores and materials; greater selectivity in power-loading installations without prejudice to future mechanization development as a whole.

In 1959, the plan was to reduce output below the 1958 level of production by 6,000,000 tons and to add only 3,000,000 tons to the increasing surplus stocks. Administrative staffs were to be reduced by 5 per cent. However, demand continued to fall in 1959 and certain of the earlier measures had to be intensified even further, including compulsory retirement of men aged 65, continued restriction on recruitment, relaxed only in certain divisions towards the end of 1959, and a further cut of 5 per cent. in administrative staff. At the end of 1959, undistributed stocks of coal stood at about 36,000,000 tons, and the board's cumulative deficit amounted to £52,000,000.

The NCB's plan for 1960 has again been based on production being tailored to demand—a total of 195,000,000 tons being produced against a total estimated demand of 196,000,000 tons. There is, therefore, an expected stock-lift of 1,000,000 tons. All divisions were given targets of maximum total output as shares of the national production figure, and minimum total outputs of large coal within those shares. In the event, and principally because of manpower, those maximum output targets have not become embarrassing (as they once threatened to do in the East Midland Division), but the large coal target has.

What then is happening "today" against that 1960 plan? National outputs for the first 40 weeks of 1960 are 10,300,000 tons down—7,500,000 tons deep-mined and 2,500,000 tons open-cast—compared with last year, and against planned reductions for the year of 7,300,000 tons and 3,800,000 tons, respectively. Output is therefore very much

as planned. Undistributed stocks are some 400,000 tons more than at this time last year, but earlier in the year, and again now, lifting has greatly exceeded the tonnages put down. Distributed stocks are, however, reduced by just over 2,000,000 tons. Large consumers, principally the CEGB and Gas Boards, have substantially reduced their stocks. Inland consumption has increased by 4,600,000 tons and exports and foreign bunkers by 1,100,000 tons.

All these figures are, of course, national and mask the shortages there are of particular grades and sizes of certain coals, and the surpluses of others. Nationally, one can say, therefore, that things are going as expected, with consumption at a higher level than might have been foreseen.

Certain other things, however, are happening "today." There is a further deficit of £6,900,000 in the first half of 1960. There are the wages and salary increases throughout much of the entire labour force and staff of the industry; there is the reduction of working hours awarded by the National Reference Tribunal; there is a continuing manpower decline; and there is the recent price increase.

The effect of the last on demand in the face of competition from other forms of energy is unknown, perhaps unlikely to be immediate—it is not so much "tomorrow" as "the day after tomorrow" when we may see the consequence.

During 1961, the plan is for a deep-mined output of 184,800,000 tons, and open-cast 7,300,000 tons—total 192,100,000 tons—against an estimated total inland demand of 191,100,000 tons and 6,000,000 tons for exports and bunkers. Allowing for certain adjustments, disposals should exceed production by some 5,000,000 tons and this should mean a further lift from ground stocks.

From 1965 to 1970 it is likely that demand will have to be reassessed in the light of changed circumstances and market reactions "today." The revised national plan envisages an output of between 200,000,000 and 215,000,000 tons, based on an inland and export trade, with a manpower force of between 587,000 and 626,000 men. The number of men on books in September was 589,000, so the figure is perilously close to the planned minimum five years ahead.

Government Policy

The NCB has to operate within the framework of Government policy. That policy is free and lively competition between different fuels, so as to give consumer choice. The problems that beset the NCB arising from this policy may be soluble in a political field, a field in which the NCB might well get relief or palliatives against other pressures. Political solutions, reliefs, or palliatives are jobs for the politicians, not those of us within the NCB. Among the matters I have in mind here are some form of protection from oil by tax or duty, cost of importing coal, the burden of compensation interest charges, oil dumping, reconversion of oil-fired power stations. Government subsidy for the coal industry, production of a fixed tonnage of coal which the Government should be prepared to underwrite, nationalization of coal distribution, the spectre of decentralization.

Whatever may be our views as individuals on any of these subjects, they are outside the range of our responsibilities in the coalfield in the tactical battle we have there to fight. We are not directly concerned in the coalfield whether the bill for the recent price increase has been sent to the right or to the wrong person. In the divisions we have to operate in accordance with the NCB's strategical policy.

We are part of the NCB and as such must be loyal to its policies, however disappointing or depressing from an operational viewpoint in our own pit or group or Area the policies may be.

The First 10 Years in the East Midlands

During the "day before yesterday," in those first 10 years, the East Midlands Division made enormous strides in increasing bulk output and productivity. The pre-vesting date "slack" which existed in many places was being taken up, power loading went ahead with more and more, and with different, machines being installed, and considerable experimentation was undertaken. There was little or no manpower difficulty and the division got its share of young, green, and experienced recruits; if the mining industry was not popular in the public relations sector, the division as a career prospect was not cold-shouldered in the labour market. Labour relations were as near the best as they could be in industrial life generally.

Output increased to 46,000,000 tons in 1956, 42 per cent. higher than in 1946, and o.m.s. and output per wage earner showed similar spectacular increases. In 1957, the total output was 46,700,000 tons. Saturday working was more successful in the East Midlands than anywhere else. By the end of 1957 an output of 1,000,000 tons saleable in a week was nothing extraordinary, and the division was within sight of a productivity of 40 cwt. per manshift overall, a figure it reached in 1958 on a number of occasions.

With the abandonment of Saturday working in 1958, and the fall in demand resulting in mounting stocks, bulk tonnages ceased to be important. The total five-day week output, however, was greater than in any previous year, and in 1959 was even higher still at 44,870,000 tons, although average manpower was falling. For the year 1959, the division attained the coveted o.m.s. of 40 cwt. Throughout the years from vesting date the division had made a consistently substantial contribution to the NCB's economy in colliery profits. From January 1, 1947 to June 30, 1960, its total profits (after charging depreciation and before charging interest) have aggregated nearly £220,000,000—something just over 8s./ton on the average—with the lowest proceeds, in fact, of any coalfield.

In the days, therefore, when coal was required at almost any cost and when bulk output was the

demanding consideration, the division provided coal in ever-increasing quantities, but always with due regard to efficiency—improvements in productivity, at all points, were constantly being sought and attained.

During these past three years of contraction there have been no closures in the division for reasons other than exhaustion of economic coal reserves, and none is so planned. Today, 1960, the division's deep-mined output is not to exceed 43,800,000 tons saleable for the year, and this is just about the figure we expect to obtain. The provisional output up to and including October 8, was 33,400,000 tons, which incidentally is nearly 700,000 tons less than in the corresponding period of 1959. Total average productivity, at 41.89 cwt. all employed and 118.54 cwt. at the face, is believed to be at the highest level ever in any coalfield in the history of British coal mining. For the year 1960 it is expected to reach 42.3 cwt. overall. The disconcerting feature of today's operations is manpower. The number of men on books now is just over 93,000—about 4,500 less than at the beginning of the year and about 10,600 less than the number on books at this time in the peak year 1957 with 7,600 fewer faceworkers. In fact, the number of faceworkers has declined by over 9,000 since its peak in 1956.

Another difficult operational feature today is large coal production. Within the maximum output of 43,800,000 tons, the division is charged by the NCB with the duty of producing in 1960 at least 11,130,000 tons of large coal. Production to date is about 8,000,000 tons.

Outlook for 1961

Tomorrow in 1961, the division's deep-mined output is planned to be 43,400,000 tons, at an overall o.m.s. of 43.1 cwt. The average manpower is estimated at 91,500—92,000 on books at the beginning of the year and 91,000 at the end. The large coal production is to be 10,800,000 tons—about 25 per cent. of total output. The average weekly percentage so far this year is under 24.5 per cent., so the formidabilities and imponderabilities of round coal and manpower loom large as 1961 approaches.

The division's contributions to the Revised Plan are scheduled for 1965 as 47,000,000 to 49,000,000 tons saleable, with a labour force of 98,000 to 102,000. It is quite clear that these manpower figures are unrealistic, bearing in mind the way the labour force has declined, the high rate of wastage, and the slowing up of recruitment in the past four years. On present trends we shall be hard put to attain the average manpower figure of 91,500 for 1961. It seems inconceivable that we could have a net increase of at least 6,500 during the following three years—1962, 1963, and 1964. Doubtless, the output figures will be reviewed again in the light of changed, and changing, marketing circumstances, and reassessment of demand, but whatever be the East Midland Division's expected contribution to the 1965 output—and at the present time it is still a minimum of 47,000,000 tons—it must surely come from increasing productive efficiency, and from ever-increasing productivity. That conclusion is inescapable from manpower figures alone, apart from other reasons.

In consequence, the divisional board is thinking in terms of at least 50 cwt. o.m.s. overall in the later 1960s, so as to preserve the economy of the division and contain the cost problem. However, with pressure for large coal, and the need for careful preparation, o.m.s. must to some degree suffer. The large coal problem is uncertain, but large coal will certainly be needed for the whole of this winter and probably for the winter of 1961-1962; thereafter, the smokeless fuel/clean-air zone aspect of domestic supply must have an accelerating impact. The preparation problem, in an age of competition from other fuels, must constantly be with us.

Formidable Prospects

What is self-evident is this; if the output in 1961 is to be 43,400,000 tons, and the Revised Plan output for 1965 is to remain at the present scheduled minimum of 47,000,000 tons, some enormous strides must be taken in the intervening three years. To increase output in four years by 3,600,000 tons, with little or no increase in labour force, and with due regard to size, quality, and consistency of product, in a less working time per week than now, is a most formidable prospect. The obvious way to tackle the problem is in the field of mechanization—nearer and nearer we move to coal mining if not without miners, at least with fewer and fewer miners.

It is most unlikely that henceforth we shall get all the men we should like. Therefore, mechanization of all coal-getting and ancillary operations becomes increasingly important, and thereby the required increase in productivity will be secured, and the costs of production largely held. But in the light of present knowledge and experience, more coal-face mechanization quickly could mean increasing the large-coal problem. That problem is likely to be with us until the end of winter 1962 at least. Moreover, the more mechanization is applied, the more engineers and craftsmen are needed, and there is already a lamentable shortage of craftsmen in a number of places.

In connection with this problem of bulk output and its quality, which I have mentioned, the marketing department has been assessing the division's markets over the next 10 to 15 years. In 1960 the supply to CEGB is budgeted at 14,300,000 tons; in 1961 the estimated supply is 15,500,000 tons; in 1965, 20,000,000 tons; in 1970, 27,000,000 tons; and 1975, 36,000,000 tons. We expect to increase therefore from about 30 per cent. to nearly 75 per cent. of the division's entire output for the CEGB. Here lies the division's ultimate tomorrow; in the expanding belt of modern power stations along the reach of the Trent from Burton to the Humber. Already, as much as 47,000 tons of coal in one week has recently gone to Castle Donnington.

High Marnham is scheduled to consume 2,500,000 tons a year. There are the new stations planned at West Burton and Holme Pierpont. We have Drakelow, Willington, and Staythorpe with their present and extended capacities. All aggregate a certain demand for smalls to be produced at low cost and of consistent quality. Whatever may or may not be the ultimate assessment of demand nationally, the lion's share—certainly for the CEGB—must come from the East Midlands Division for reasons of cost, and proximity and extent of reserves.

Features of the Change in the East Midlands

The tactics in the battle over the next year and the years following, will not differ, save in emphasis, from those of earlier successful encounters. First and foremost is safety; everything else is subordinate. Too often have we read lately in proceedings of inquiries, and HM Inspector's reports thereafter, of shortcomings at the pit. The safety record of the East Midlands Division is, like the division itself, second to none, and it must remain so. I am too well aware from personal experience the deficiencies that are revealed when you turn the microscope on a pit after some occurrence. There is only one insurance—strict adherence to and observance of all legislation and of directives, both statutory and internal, and the enforcement of discipline to secure this end.

The quality of the product is a vital consideration in an era of competition. For 10 years or so after vesting date when the cry was "coal, coal, and more coal," the consumer had no alternative. There was a seller's market, only we did not sell, we programmed and allocated. Now we seek custom —the buyer has alternatives and can be choosy. We have to woo him and win him. We have undoubtedly affronted him by the recent price increase. If he is still going to do business with us and not be alienated altogether we must be sure he has what he orders and pays for. There is practical difficulty sometimes when a small not too scrupulous merchant intervenes, but I am thinking of our major supplies and obligations. Some of you have heard me say this—I make no apology for its repetition.

If you or I go into a public house and order a bottle of a well-known brew, or a tobacconists for a packet of a famous make of cigarettes, or a chemists for a tube of proprietary toothpaste we know we can rely on a definite standard of quality and consistency. Only in the rarest case is the particular article defective or deficient. This is the sort of standard at which we must aim for those who order and buy our products. You may feel my illustrations are extravagant but I stand by them. In an era of competition and consumer choice we must guarantee the standards of our product so as to influence that choice.

The Divisional Coal Quality Complaints Committee, which meets once a month to consider serious or recurrent complaints from merchants or consumers, finds that the complaints are mainly of house coal, but also, from time to time, of industrial or electricity coals. To avoid these it should be a point of managerial honour that no sub-standard wagon or load should leave the pit. Although coal production is not like a manufactured article and one is at the mercy of the vagaries of natural, geological conditions, such parts of the pit's operations, the preparation plant particularly, which are free from natural interference should also be free from criticism.

The low proceeds of the division indicate the inherent difficulties of much of our coals. Even with the prospect of increasing future supplies to the CEGB, consistency of quality and ash specification will be important. Manpower shortages will add to preparation difficulties, but if we fail to deliver the goods the customer will go elsewhere.

Strenuous efforts are being made in selling coal. We have determined not to let markets or trade go against us by default or by passiveness. Marketing staffs have been substantially reinforced—on the selling side and in the field of technical advice to consumers; there continues the programme of coal advertising in association with nationally-known coal users and in the Press and on TV; the board's housewarming plan has been launched and will continue; packaged fuel will be introduced on an increasing scale; we have mobile order offices operating in the East Midlands Division; a new sales advisory centre has been opened in Mansfield; we are looking for premises in Chesterfield suitable for a similar venture and next year a new retail office, well equipped and modern in all details, will open in Leicester; we have a thriving retail business in Nottingham. These are some of the fields into which we have carried the fight for coal sales and for a selling service to the coal consumer.

All this effort will be nullified if the quality of the product fails, and we fall down in the eyes of the public, or any section of the public, by reason of the lack of standards or consistency in the coal we are selling.

Problem of Size

There is also, at least for today and tomorrow, the problem of size. There are already serious time-lags in house coal deliveries, due primarily to supply difficulties. There is the risk of wagon shortage and a movement problem facing us. We have already in recent weeks had some unhappy experience in the wagon supply position. There has already been much in the Press. Even if the coming winter is not severe, there are signs of a combination of critical circumstances; if it is severe, there could be grave consequences. The public relationships of the board, bad as they have been in the past, will then surely never have been worse.

On the large coal front, although much has been done, efforts should be made to do more; can you not take measures so as to save or produce three more tons of large coal per hour at each pit between now and the end of the year? This would at least ensure the division's subscription to

security for the coming winter, and is the measure of our success or failure in this feature of the tactical battle.

Productive efficiency or the output per manshift is the basis of economic security in any mine. Of the division's output, 61 per cent. is now mechanically cut and loaded, against a national figure of about 37 per cent. In the field of powered supports, the Roofmaster and other like devices must come to take their places as permanent, up-to-date, features of coal-face work. Similarly with the mechanization of rippings. The contribution of the engineer will be paramount—and we have some of the best engineers, mining and otherwise, in this division. One glance at the cost trend will serve to illustrate this point of efficiency. The average wages costs per ton in this division have declined progressively from 29s. 10.9d./ton in 1957 to 28s. 10.5d./ton in the first eight months of 1960. During the same time total costs declined by 6.6d./ton. Face o.m.s. has risen in that same period from 105 to 118.6 cwt. Admittedly this is all before the recent wages increase, but in an industry so sensitive to labour costs as the mining industry this is the key to continued economy.

I may have appeared to paint a gloomy picture on manpower. The views I expressed are my own, as indeed are all opinions in this paper; they bind no one but myself. But despite that picture, it behoves each of us as best we can to try to do our utmost to restore confidence in the security of the industry in this division, as a good career for the boy, young man, re-entrant or craftsman.

Security of Employment

There *is* security of employment in this division, despite the adverse publicity given to the industry, stay-in strikes, certain TV broadcasts, and the recent history of closures. We did launch a recruitment campaign, in Notts, in particular, earlier this year, and it met with some success. For the first three to four months of the year, recruitment balanced normal wastage, the compulsory retirement of men over 65 being regarded as exceptional. During the summer months the rate of net wastage greatly increased, and is still substantial. Nevertheless, we have recruited to the division this year well over 4,000 men and boys, our juvenile intake being only fractionally below what it was in 1959. We shall again be setting our stall out to try to recruit, particularly in the developing areas of the division, and notwithstanding that some of the pits elsewhere will be in Category "C." We shall seek by stressing the prestige of the division and the contribution it has to make to the future, to compete with other industries for our fair share of the available manpower. In this I am confident we shall get the backing, as we did at the end of 1959 and early this year, of the majority of NUM leaders in the division.

The one great asset we have in the East Midlands Division, pervading all other tactical considerations, is the continued excellence of labour relations combined with the skill and progressive outlook of our engineers. The good relationships we enjoy with the men and their representatives at all levels are priceless advantages. The recent campaign for large coal has shown the value of improved and continued consultation. Well-blessed as we are in this regard we must not take the blessing for granted. If you are to triumph today, tomorrow, and thereafter, you must take heed of yesterday, and the vital worth of the co-operation and human relationships to which in no small measure yesterday's successes were due.

DISCUSSION

In opening the discussion following Mr. Miron's paper, MR. W. R. JAMESON, the branch president, wondered whether the necessary capital was, and would be, available for projects that would be submitted, or if there would be a restriction which would impede any developments. MR. MIRON said that experience so far had shown that each year the capital allocation to the division had, generally speaking, been sufficient to enable all necessary schemes and plans to proceed and he did not visualize there being any material change for the future. He did not think that there would be any undue restrictiveness. In reply to a further question by Mr. Jameson on safety in relation to training, Mr. Miron said that the syllabus for preliminary training at the training centre would always be brought up to date so as to include the most recent knowledge and experience in the safety field. There were no material changes imminent in the training regulations.

In reply to a question by MR. W. SHARPE, MR. MIRON was of the opinion that the problems of large and small coal which were now facing the board had not been due to any lack of reasonable foresight. He referred to the forecasts and expectations which had been published by different authorities and persons up to the year 1957.

MR. T. STORRS asked Mr. Miron what effect the suspension of Saturday working had had on efficiency and whether a future increase in demand might not necessitate a return to extended working. MR. MIRON said that the suspension of Saturday working had undoubtedly helped to improve all-round efficiency; no longer was there an unbalanced attendance on a Saturday and there had been more time for essential maintenance and repair, with a better opportunity to organize this work at the weekend. He did not visualize a return to any form of extended hours working.

MR. G. INVERARITY was of the opinion that too much emphasis could be placed on percentage figures for large coal rather than actual tonnage. Reduced manpower, as Mr. Miron had demonstrated, would entail higher mechanization with higher bulk output. This itself should mean a higher bulk tonnage of large coal even if the percentage were not increased.

In reply to a question by MR. TURTON, MR. MIRON gave figures of the net manpower wastage in the division during June and July and in recent weeks subsequent to the holiday period. He referred particularly to the loss and shortage of craftsmen and emphasized the point made in his paper about the need for craftsmen now and in the future. He dealt with the problem of remuneration for craftsmen in the mining industry and the problem of competition from other industries with high overtime rates.

MR. T. WRIGHT commented upon the likely small

coal requirements by the CEGB for the future and expressed concern about whether the division could maintain its record of profit with an increasing demand for such fuel, which commanded a relatively low selling price.

MR. MIRON, in accepting the value of this comment, stressed that salvation must lie, apart from any further variation or modification in the price structure and ash penalties, in the field of increasing productivity and holding and reducing the costs of production.

MR. R. SCOTT, who also contributed to the discussion on craftsmen, asked whether short-time working in some other industries would help the coal industry's manpower problem. MR. MIRON observed that the short-time working in, say, the motor-car industry might mean a temporary movement of workmen or craftsmen from that industry to the mining industry, but a return to full-time working in the car industry could mean the renewed loss of those who had transferred temporarily. Moreover the short-time working in that industry would be unlikely to benefit the East Midlands Division of the NCB in the same way as, say, the West Midlands Division.

Controlled Flow Chutes

FOR use at transfer points on an underground trunk conveying system, two types of controlled flow chute have been designed by Mr. R. Lamb, a fitter at the National Coal Board's Clifton Colliery (Notts). The first design consists of a special section of head chute which fits adjacent to the delivery roller. The bottom plate which receives the flow of coal is sited well towards the top of the roller and is supported in guides at each side, through which it is free to slide.

Two springs, one at either side underneath the plate, hold it in its top position, at which stage there is about 1½ in. clearance between the top edge of the plate and the surface of the conveyor drum. A switch mounted on the fixed part of the chute is actuated by a small bracket on the underside of the sliding plate. Should an obstruction occur at any point on the width of the belt between the belt on the head drum and the edge of the sliding plate, the plate is pushed away down its guides, the switch operates and the conveyor driving motor is tripped.

In the second design the top plate is free to slide between the side plates and over the top of a fixed plate. It is controlled by two springs, one on each side of the chute. Extensions to the top plate pass through slots in the side of the chute structure, the slots serving to guide the bottom end of the plate. When in the operative position the top edge of the plate is set some 1½ in. clear of the conveyor head drum. Should an obstruction in the form of a lump of coal or a broken piece of belt become jammed between the head roller and the chute, the top plate slides down over the fixed plate.

This action operates a tripping switch fitted to the underside of the chute, and so stops the conveyor.

1959 COAL OUTPUT WAS

Canada's Lowest Since 1909

CANADIAN coal production in 1959 dropped by 9.1 per cent. to 10,626,722 tons from 11,687,110 tons in 1958. This is the lowest since 1909 and is 44.5 per cent. less than the record 19,139,112 tons produced in 1950. Throughout the country, the output of bituminous coal decreased by 10.4 per cent. and that of lignite by 13.6 per cent., while the production of subbituminous coal increased by 2.9 per cent.

More than 41 per cent. of the coal output was from Nova Scotia, 9.4 per cent. from New Brunswick, more than 18 per cent. from Saskatchewan, 24 per cent. from Alberta, and almost 7 per cent. from British Columbia and Yukon Territory. Both Alberta and New Brunswick reported an increase in production. In Alberta the decrease in the production of bituminous coal was more than offset by an increase of almost 3 per cent. in that of subbituminous. The increase for the province as a whole was 1.2 per cent. The New Brunswick coal industry established a record high of 1,003,387 tons, about 27 per cent. more than in 1958.

In Nova Scotia production decreased 16.7 per cent.—to 4,391,829 tons in 1959 from 5,269,879 tons in 1958. Saskatchewan and British Columbia reported decreases of 13.6 per cent. and 14.0 per cent., respectively, from their 1958 production.

More than 38 per cent. of the coal mined in Canada was from strip mines. Saskatchewan's entire production was from strip mines and accounted for 47.8 per cent. of the national strip-mining total. Alberta, where 47.6 per cent. of the coal was won by stripping methods, accounted for almost 30 per cent. of strip coal production; New Brunswick, where 82.3 per cent. of the coal was won by stripping, produced 20.3 per cent. All production in Nova Scotia was from underground mines. Production in British Columbia was mainly from underground mines, only 11.7 per cent. coming from strip mines.

SUBSIDIZATION OF CANADIAN COAL IS RECOMMENDED

REPORT by the Royal Commission on Coal has been released by the Canadian Government.

There are 16 recommendations, the first 11 of which pertain to continued assistance to the coal industry, but in modified form from the present transportation assistance on the movement of coal. In essence, the report recommends the introduction of direct subsidies and that the subsidies take two forms—a basic subsidy to apply in all coal-producing areas of eastern and western Canada and the social subsidy to apply where the financial support of the industry is beyond the resources of local and provincial governments.

The report is published by the Department of Public Printing and Stationery, Ottawa (Catalogue No. Z1-1959/2, $2).

IRON AND STEEL INSTITUTE

IRON AND STEEL ENGINEERS' GROUP

Paper on Steelworks' Lighting

First of the four papers read at the recent meeting at Scunthorpe of the Iron and Steel Engineers' Group was given in abstract form in our last issue (p. 1021). Abstracts from the second paper are given below and the other papers will be dealt with similarly in a subsequent issue. The four papers are published in full in the Journal of the Iron and Steel Institute for October.

SOME ASPECTS OF LIGHTING IN THE IRON AND STEEL INDUSTRY

By D. R. M. NISBET
(*Appleby-Frodingham Steel Company*)

GOOD lighting in one area, say, a melting shop, might be totally inadequate for the needs of a machine shop, and conversely the intensity required in a machine shop will, most likely, be in excess of what is necessary in a melting shop. It follows, therefore, that each function or working area must be considered separately, and the level of illumination required for each must be decided on its own merits.

To assist in establishing the correct standard of lighting to be employed under the varying conditions that exist in a large iron and steel works, there are several published references that can be consulted. In fact, certain circumstances demand a minimum standard of lighting that has to be provided by statute. Where these minimum standards apply in an iron and steel works depends to some extent on the interpretation placed on the appropriate regulation, for although there is a qualified exemption given to some parts of iron and steel works, the regulation must apply in others. A reminder of these regulations is useful at this point.

Regulation 2

(*a*) The general illumination over those interior parts of the factory where persons are regularly employed shall not be less than 6 ft.-candles measured in the horizontal plane at a level of 3 ft. above the floor. Provided that in any such parts in which the mounting height of the light sources for general illumination necessarily exceeds 25 ft. measured from the floor or where the structure of the room or the position or construction of the fixed machinery or plant prevents the uniform attainment of this standard, the general illumination at the said level shall not be less than 2 ft.-candles, and where work is actually being done the illumination shall not be less than 6 ft.-candles, or the greatest reasonably practicable illumination below 6 ft.-candles.

(*b*) The illumination over all other interior parts of the factory over which persons employed pass shall when and where a person is passing be not less than 0.5 ft.-candles measured at floor level.

(*c*) The standard specified in this regulation shall be without prejudice to the provision of any additional illumination required to render the lighting sufficient and suitable for nature of the work.

It is clear from this regulation that although minimum figures of 6 lumens/sq. ft. and 2 lumens/sq. ft. are quoted, in certain circumstances these would be considered inadequate. In other words, the maximum lighting intensity necessary in each case is left to the discretion of the lighting designer. It would seem, therefore, that in those places in an iron and steel works where regulation 2(*a*) applies (*e.g.*, in workshops), a recommended code of practice should be adopted.

As previously stated, certain exemptions are allowed, and these are concerned with the type of work being done on the plant. Details of the exemptions are given in subsection 5(*b*) of the regulations. Here it is found that regulation 2(*a*) will not apply to "parts of factories in which the following are carried out: The conversion of iron into steel, the smelting of iron ore, iron or steel rolling, hot rolling or forging, tempering or annealing of metals."

The first question that arises is, why are such areas exempt from statutory regulations? Presumably, one of the main reasons is because it is recognized by authority that the actual area where work is being done is only a small percentage of the total area that has to be lit. Another reason may be that the class of work normally done in these areas is such that a high intensity of lighting is not necessary to enable the performance of the work to be carried out satisfactorily. It is, therefore, unnecessary and costly to overlight such large areas.

On deciding a suitable illumination level for these areas, there are several factors which ought to be given due consideration. Some of these factors are obvious, and some are not quite so obvious, but still important. Four such factors are:—(1) Environment and safety; (2) experience and practice; (3) cost; (4) maintenance.

Environment and Safety

All lighting should be good lighting: it will not be good lighting if any physiological strain is imposed on personnel due to limitations in the design of the installation. It goes without saying that for safety's sake, too, all lighting should be good. Any lighting system which fails to satisfy

the needs of safety is an indictment and could be construed as a breach of regulations.

Experience and Practice

While work can be carried on satisfactorily in comparatively low lighting intensities, it is now accepted that lighting standards of yesterday are well below what are considered as normal today. This applies not only throughout industry but even in domestic surroundings. Lighting is an amenity and the demand for better lighting has grown along with the demand for other amenities. It follows then that something more than just adequate lighting has to be provided to keep abreast of the times.

The snowball effect of improved lighting has to be borne in mind. It has already been stated that a good standard of lighting has to be provided by statute in some parts of the works. Immediately this is done, all other installations which are not lit to these standards become badly lit by comparison. However, there is no justification for improving lighting beyond the required intensity in order to preserve uniformity of values. A melting shop does not need to be lit to the same intensity as a machine shop or, to take it to extremes, a drawing office.

Cost

Obviously, one of the most important factors to be considered when a lighting scheme is being designed is the cost. But for cost, all areas could be lit to near daylight conditions. Many considerations enter into the economics of lighting and not least of these may be efficiency of production. Claims that good lighting can increase productivity are continually being made. The standard of lighting, therefore, should be the best justifiable.

In order to assess the various factors affecting the cost of lighting, a typical area (an open-hearth melting shop) has been considered. For comparative purposes, the costs for a number of different schemes of lighting have been estimated. For simplicity the comparison has been made on a basis of the same total lumen output which, while not strictly accurate, is near enough for these purposes.

The systems that have been compared are:—

Scheme 1.—1,000-W tungsten-filament lamps only, voltage 110.

Scheme 2.—1,000-W tungsten-filament and 400-W mercury-discharge lamps, voltage 110 (separate fittings).

Scheme 3.—1,000-W tungsten-filament and 400-W mercury-discharge lamps, voltage 250 (twin fittings).

Scheme 4.—400-W M.B.F./U., voltage 250.

Scheme 5.—1,000-W M.B.F./U., voltage 440.

In each case, costs have been estimated for:—(*a*) Initial installation (including the cost of fittings, transformers and wiring, lamps, and labour to install); (*b*) power consumption; (*c*) lamp changing (including the labour costs involved). NOTE.—In all cases list prices have been used.

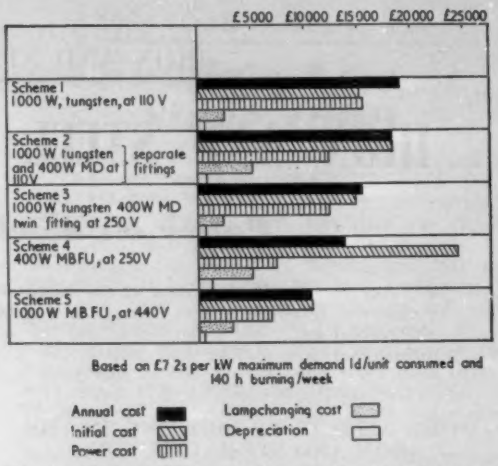

£5000 £10000 £15000 £20000 £25000
Scheme 1
1000 W, tungsten, at 110 V
Scheme 2
1000 W tungsten and 400 W MD at 110 V
separate fittings
Scheme 3
1000 W tungsten 400 W MD twin fitting at 250 V
Scheme 4
400 W MBFU, at 250 V
Scheme 5
1000 W MBFU, at 440 V
Based on £7 2s per kW maximum demand 1d/unit consumed and 140 h burning/week
Annual cost
Initial cost
Power cost
Lampchanging cost
Depreciation

FIG. 1.—DIAGRAM SHOWING ANNUAL COST OF SCHEMES 1-5 AND THE ELEMENTS THAT MAKE UP THE ANNUAL COST.

The life of the fittings has been given as 15 years and the life of the installation as 30 years. The number of burning hours per week has been taken as 140 and the cost of power as £7 2s. per kW maximum demand plus 1d. per unit used. From these figures, and taking depreciation on a straight-line basis, annual costs have been calculated and a block diagram prepared (Fig. 1). This shows the comparative annual costs of the various forms of lighting and the main elements making up these costs. Curves have also been drawn to show the effect on annual cost of a variation in distributed power cost and also of a variation in burning hours on the several lighting schemes (Fig. 2).

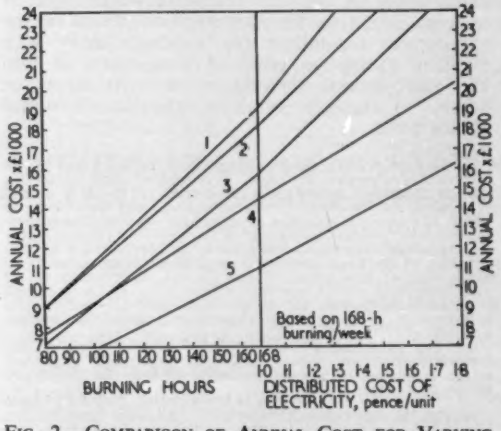


FIG. 2.—COMPARISON OF ANNUAL COST FOR VARYING BURNING HOURS AND POWER COST OF SCHEMES 1-5 (BASED ON DISTRIBUTION COST OF 1D. PER UNIT AND 168 HR. BURNING PER WEEK).

The important part of Fig. 1 is the annual cost, and it is interesting to note, on examining the breakdown of this cost, that the item which most influences the annual cost is the cost of power. It goes without saying, therefore, that the system which consumes least power has a distinct advantage over all other systems. However, it must not be assumed that this advantage outweighs all others. Before a choice of system is made, there are several aspects to consider. The most important of these are:—

Application.—One of the essential features of any lighting scheme is that there must be an even distribution of the light over the area. In order to achieve an even distribution of light, the ratio of the number of lighting fittings to the area must be the correct one.

The lamps that are shown in scheme 5, for example, are very high output lamps, having about three times the lumen output of the same wattage tungsten-filament lamp of scheme 1. This means that it would only be practicable to use this type of lamp in a very high building. The lamps quoted in the other schemes have a much more general application.

Working Voltage.—There are three standard voltages in general use for lighting:—(i) 110; (ii) 250; and (iii) 440.

(1) 110-V System: 110 V is fairly widely used in heavy industry for lighting. The 110 V can be obtained through double-wound transformers which have the centre-point of the secondary winding connected to earth. This ensures that the voltage, above earth potential is only 55 V, a voltage generally considered to be safe. An added advantage of this system is that a convenient safe supply is made available for socket outlets for portable tools. A disadvantage with this system, however, is that the life of a 110-V mercury-discharge lamp is comparatively short, only 1,500 hr., compared with 5,000 hr. for the same lamps at 250 V. However, where the working voltage is 110, a blended lighting scheme shows certain advantages, mainly in running costs.

(2) 250-V System: 250 V is probably the most widely used voltage for lighting. At this voltage the disadvantage of the 110-V mercury-discharge lamp (comparatively short life) is overcome.

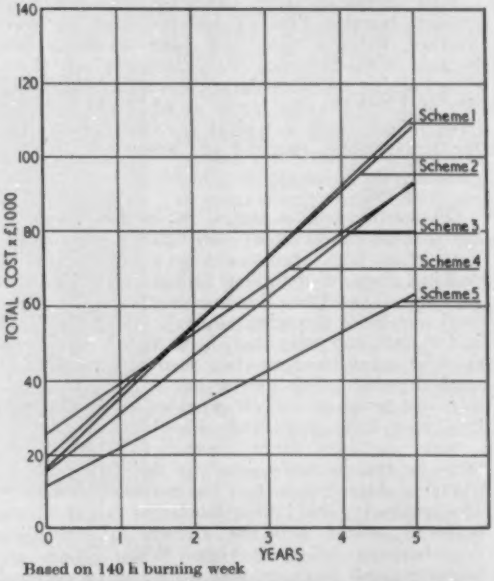
There is no reason why any danger should exist from a 250-V system provided that it is properly installed and maintained. Any possible dangers that it may have are far outweighed by its advantages for use with high-wattage lighting installations.

(3) 440-V System: The safety aspect becomes still more important when 440 V is used for lighting; 440 V is the nominal standard power-supply voltage in the UK. and technically there is no reason why this voltage should not be used for lighting. From the economic angle, and if the application is suitable, there are substantial advantages to be gained by using the high-output lamps available for use on comparatively high voltages.

Some Miscellaneous Considerations.—Any form of lighting must cater for all the requirements that may be called for. One requirement that is often called for is colour discrimination, for example, the ability to distinguish one colour of order card from another. Compared with tungsten-filament lamps, discharge lamps fall down heavily on this count owing to the natural characteristics of the lamp. However, there are means of correcting for this colour deficiency.

Two disadvantages of any form of discharge lighting should be mentioned. First, there is a stroboscopic effect which gives a flicker effect on moving objects. This has a nuisance value which can be reduced to some extent by suitable methods of connection. The second disadvantage is that in the event of a failure of the supply, discharge lamps do not light immediately the supply is restored. The lamps have to cool before the arc will re-strike, and this may take up to about 5 min. This obviously can present certain difficulties, depending on the work being done in the lighted area.

All things considered, there is obviously much to be said for discharge lighting that is colour-corrected either by using it in conjunction with tungsten-filament lighting or by using fluorescent lamps. Based on the cost over the life of the installation, however, the fluorescent lamp is to be preferred, even in spite of the very high initial cost. It should be pointed out that the high first cost is due mainly to the cost of the lamp itself. It is probably a fair assumption that as this type of lamp becomes more generally used, its cost will fall, thus further enhancing the case for its use.



Based on 140 h burning week

FIG. 3.—COMPARISON OF CUMULATIVE COST FOR FIRST FIVE YEARS OF SCHEMES 1-5.

Still comparing the first cost of an installation with the running cost, the curves in Fig. 3 show the cumulative cost of the installations, under review for the first five years of their life. The comparative steepness of the slope of the curve of the tungsten-filament installation emphasizes the heavy running cost associated with this type of installation.

Maintenance

Adequate maintenance arrangements on any lighting scheme are both desirable and economic. There are, however, certain practical considerations that arise on an iron and steel works which tend to make maintenance not quite so straightforward as it might appear at first sight.

The following shows the make-up of the range of fittings used on a lighting installation on a coke-oven plant:

Commercial	171
Open industrial	1,049
Open industrial, pole-mounted	78
Flameproof	491
Bulkhead	422
Floodlights	89
TOTAL	2,300

Much of the lighting may be classed as local and as such does not fall into any regular pattern in quantity; the "density" of the installation on this particular plant is only one fitting per 90 sq. yd. This results in a high time-consuming factor in maintenance, for the following reasons.

First, consider lamp changing. Assuming an average burning time of 120 hr. week (a lower average burning time has been assumed here because of the influence of the comparatively short-time burning of office lights) and an average lamp life of 1,150 hr. (the hours at which 50 per cent. have failed, from a typical survival curve), then the replacements required per week

$$\frac{2{,}300 \times 120}{1{,}150} = 240.$$

Observation over a period shows that, owing to the diverse character of the lighting installation, the average time taken to change a lamp (including walking time, dismantling fittings, etc.) is about 10 min. Therefore, the man-hours required per week for lamp changing alone is 40. This figure is for one man only, but, in fact, in some cases, say, for safety reasons, two men are required to work together. This means that on a plant of this size, and based on a 42-hr. working week, one man is almost fully employed changing lamps.

Now consider lamp cleaning. This would seem to absorb more time per fitting than lamp changing does, but in fact the reverse is the case. The reason for this is that the lamps fail at widely scattered points, and the element of travelling time between fittings is high. When fittings are being cleaned, however, this work can be planned on an area basis, and so the non-effective working time per fitting is reduced. An observed average time for cleaning a fitting is about 6 min. per fitting. Again, based on a 42-hr. week and assuming no "idle" time, 420 fittings could be cleaned every week. On the plant quoted, this would mean all fittings could be cleaned every $2{,}300 \div 420$ weeks, *i.e.*, five and a half weeks approximately. This is a reasonable time cycle. In fact, what would happen in practice is that some lamps would be cleaned more frequently, others less frequently, giving an average cleaning cycle of five and a half weeks.

Unfortunately, iron and steel works' areas seldom exist in convenient sizes to employ multiples of one man full time on lighting maintenance and, in most cases, one man may be doing lamp changing and lamp cleaning. This reduces the efficiency of working and therefore lamp changing and lamp cleaning should, if at all possible, be kept as two separate functions.

Good lighting is an expensive commodity, though a necessary one. However, with a realistic approach to design, for example, by lighting for requirements and not for show, by long-term rather than short-term costing, the expenditure involved can be justified. Good maintenance is the best way to ensure that value for money is being obtained from any lighting installation.

RESEARCH ON THE ROLLING OF STRIP

JUST published by the British Iron and Steel Research Association, 11, Park Lane, London, W.1, "Research on the Rolling of Strip" is a symposium of selected papers on this subject produced between 1948 and 1958. As Prof. Hugh Ford says in his foreword, this period was particularly productive of original papers on the mechanics of strip rolling, but these have become rather scattered throughout engineering and metallurgical literature. Their presentation in this one volume should, therefore, be of interest and material help to all those concerned with the subject, particularly rolling mill engineers and designers.

The gradual development of practical and reliable methods of rolling mill calculations from basic theory is well illustrated by this symposium. The whole subject is one of considerable importance at a time when there are rapid developments in rolling-mill design and control, stimulated by the increasing demand for high-quality steel strip by the consuming industries.

Seventeen papers are presented, complete with photographs, monographs, graphs, and tables. The volume (11 in. by 8½ in., 216 pp., light card covers) is obtainable from BISRA's information officer. It is free to BISRA members on application by member firms' official representatives; to non-members the price is £1 1s. ($3), postage and packing included.

PROGRESS IN MINING DEVELOPMENT

Sir Andrew Bryan's Confidence in Future

PROGRESS in developing the mining industry had been absolutely remarkable during the past 12 years and mining engineers were now coming to this country from all over the world just to see what a modern colliery should be, Sir Andrew Bryan, a past president of the National Association of Colliery Managers, said at last Friday's annual dinner of the association's South Wales Branch at Porthcawl. The industry was passing through difficult times, but it had done this before and survived. The dinner was attended by 250 branch members and their guests.

Sir Andrew, a former member of the National Coal Board, said he was sure the industry would prosper again and remain one of the major industries vital to the nation's economic success and security. This country could not afford to neglect the welfare of the mining industry and he hoped the policy of the Government and those in control of the industry would ensure its success.

The present membership of the NACM—only 20 short of 3,000—was the highest ever recorded in the association's history. Sir Andrew was responding to a toast to "The Mining Industry and The National Association of Colliery Managers," proposed by Mr. G. S. Morgan, production director of the South-Western Divisional Coal Board.

For the first time in the history of the mining industry in South Wales there was insufficient manpower available to meet requirements, said Mr. Morgan. As far as the South-Western Division was concerned, the period of contraction in the industry was over. But they would have to operate on the basis of limited manpower. Although it might in the long term prove advantageous, it would create some problems in the next few years. Mechanization would have to be increased to a substantial degree. They could not miss the opportunity of meeting developing markets.

Responding to a toast to the Guests, proposed by Mr. A. Maddox, Area production manager of Area No. 5, South-Western Division, Mr. James Callaghan, MP for Cardiff South East, called for a three-point plan for the industry. He advocated a national fuel and power policy embracing all fuels, a minimum target fixed for coal output, and a resumption of coal exports on long-term contracts. He believed very strongly in the future welfare and success of the coal industry. The more he saw of the oil fuels of the Middle East the more certain he was that a strong and healthy coal industry was needed in this country.

Mr. Callaghan said he was appalled by the complete lack of knowledge among most Londoners of the coal industry. "It has occurred to me more than once that you could do a wonderful job in public relations if only you would get hold of local leaders of opinion and bring them down to the coalfield," he said. "Your roles as colliery managers are not understood. You are a valuable and indispensable element in the production of coal, but you hold your light under a bushel. Do your own public relations work and other people will know of the enthusiasm, skill, hard work, and energy used in the production of coal."

The guests were welcomed by the branch president, Mr. Douglas A. N. Simpson, deputy Area production manager (planning and reconstruction), No. 3 (Rhondda) Area, South-Western Division.

A GROUP AT LAST FRIDAY'S ANNUAL DINNER OF THE SOUTH WALES BRANCH OF THE NATIONAL ASSOCIATION OF COLLIERY MANAGERS. SEATED ARE MR. D. A. N. SIMPSON, BRANCH PRESIDENT (CENTRE), MR. JAMES CALLAGHAN, MP (LEFT), AND SIR ANDREW BRYAN.

New Equipment and Products

Water Infusion Pump

THE water infusion pump, manufactured by Richard Sutcliffe, Limited, Wakefield, consists of an oil hydraulic circuit which drives two reciprocating rams which are in turn directly coupled to the two rams of the water pump. The oil is supplied from a variable delivery pump which allows the oil circuit to select automatically the most suitable pressure and quantity of water. The output of the water pump is 8 gal./min. at 3,000 lb./sq. in. and is infinitely variable down to 22 gal./min. at 1,100 lb./sq. in., the pressure and volume varying inversely.

The control of the pump (Fig. 1) can be adjusted so

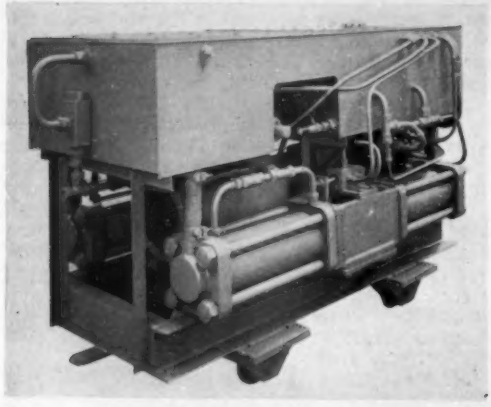


FIG. 1.—HYDRAULICALLY DRIVEN WATER INFUSION PUMP.

that an output of 5 gal./min. at 1,500 lb./sq. in. is obtained to supply water for a conveyor ramming system. Under these conditions it is possible to utilize the oil circuit to drive a 5-h.p. portable stable hole conveyor or a hydraulic drill.

The variable delivery oil pump is driven from a 30-h.p. fan-cooled, flameproof, 550-V, electric motor.

Mounted above the electric motor and pump is a mild-steel tank with two compartments in which are stored the water and the hydraulic oil, a temperature thermostat being fitted to the tank. The whole of this equipment is mounted on a mild-steel fabricated baseplate mounted on wheels at a suitable rail gauge.

Safety in Operation of Boom Cranes

AN important contribution to greater safety in the operation of boom cranes is made by the new forward electro-alarm warning system, a device manufactured in Fresno, California, and marketed by Thos. W. Ward, Limited, Albion Works, Sheffield.

Simple in action, robustly made, and easily installed by the user's own maintenance fitters, the alarm consists of three essential units working together—a sensitive detector projecting from the extreme end of the crane boom, a warning horn mounted close to the crane operator, and a master control unit located in the cab. The device works from the starter battery or lighting circuit and is weatherproof and foolproof.

Accidents caused by the boom of a crane coming into contact with overhead power cables and similar hazards are dangerous and expensive. This warning system enables the crane driver to avoid such accidents and to prevent collision of the boom within a predetermined distance up to 400 ft. The appropriate "danger distance" is pre-set by simple adjustment of the master control unit.

Supplied with a standard 58-ft. length of cable, the basic forward electro-alarm outfit weighs no more than 40 lb. complete. Extra cable is obtainable in convenient lengths, complete with waterproof connector plugs, to adapt the system for cranes with jibs longer than 50 ft. An important safeguard in the system is a flash-warning light, mounted on the master control unit, which comes into action in the rare event of a circuit failure, to show the operator that the detector is no longer sensitive.

High-intensity Plate Magnet

AN addition to its existing range of plate magnets is announced by Rapid Magnetic, Limited, Lombard Street, Birmingham 12. The new high-intensity permanent magnets, designated "KD" (Fig. 2), have been introduced for the removal of tramp iron from depths of feed up to 5 in. They are available in a range of sizes, multi-pole units, and with a choice of pole faces.

FIG. 2.—"KD" MAGNAPLATES FOR THE REMOVAL OF TRAMP IRON FOR DEPTHS OF UP TO 5 IN.

The equipment has many applications where the ingress of tramp iron is a menace to the product or constitutes a danger to processing machinery. Ideally suitable for installation in chutes, ducts, hoppers, feed-tables, or suspension above weirs, conveyors, or other carrying media, it may also form or replace delivery chutes.

General Purpose Winch

CAPABLE of lifting a maximum load of 10 cwt., a new power-driven winch (Fig. 3) is now being produced by Henry Sykes, Limited, Southwark Street, London, S.E.1, to meet the demand for a unit which possesses the maximum degree of strength, combined with the extremely sensitive degree of control demanded in many winching duties.

This winch, known as the No. 3 size in its range of

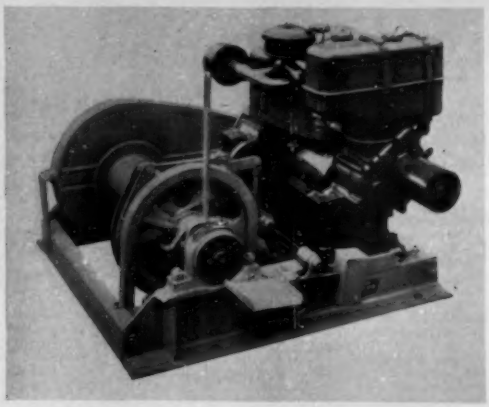


FIG. 3.—GENERAL PURPOSE 10-CWT. WINCH.

single-barrel winches, is a small general purpose winch which will also operate an 8-cwt. drop-hammer. It uses a 6-in. dia. cast-iron barrel with an effective length of 15 in. An alternative barrel of 12 in. may be fitted if required. The barrel is carried on ball and roller bearings in grease-tight housings and is operated through a Jackson friction clutch. The drive is by a duplex chain. An external contracting type footbrake is fitted and the use of this unit, in conjunction with the Jackson clutch, gives a high degree of control where loads are required to be positioned with maximum accuracy.

Both diesel- and petrol-engine powered versions of the winch are produced, the diesel version using an SL2 Lister twin cylinder air-cooled diesel developing 5½ b.h.p. at 1,200 r.p.m., this being fitted with a 3 to 1 reduction gearbox. The petrol engine version is a single cylinder type 5B J.A.P. engine developing 5 b.h.p. at 1,800 r.p.m., the engine being fitted with a 4 to 1 reduction gearbox. The overall length and width of both versions is 3 ft. 6 in., the height of the diesel version is 2 ft. 8 in., and that of the petrol version is 2 ft. 2 in. The diesel winch weighs 1,000 lb., and the petrol-driven winch weighs 680 lb.

Water Infusion Gun

PURPOSE of the infusion gun designed by Richard Sutcliffe, Limited, Wakefield, is to provide a means of sealing holes drilled into coal and at the same time allow the pumping of high-pressure water for seam infusion.

The gun (Fig. 4) consists basically of a neoprene seal expanded radially against a shoulder by means of hydraulic pressure. The seal is contained in a tube which has two separate passages, one of which allows passage of the infusion liquid, while the other allows hydraulic liquid to actuate the piston expanding the seal. The hydraulic fluid is supplied by means of a hand pump and the infusion fluid by a power unit. For deep drillings guns may be used in series.

Rotary Power Vane Compressor

INTRODUCED by the Consolidated Pneumatic Tool Company, Limited, 232, Dawes Road, London, S.W.6, a new version of the 125-cu. ft./min. rotary "Power Vane" compressor (Fig. 5) has a streamlined canopy and a towbar support, the canopy providing easy access to the engine and compressor.

The basic compressor design is unchanged, this consisting of two eccentric vane-type compression stages mounted in line with the engine, positive alignment of the engine and the first stage compression casing being by a tandem piece with a further tandem piece separating the two compression stages.

The compressor is powered by a four-stroke, four-cylinder Ford 592E water-cooled direct injection diesel engine which develops 47 b.h.p. at a governed speed of 1,800 r.p.m., on a continuous 12-hr. rating. The

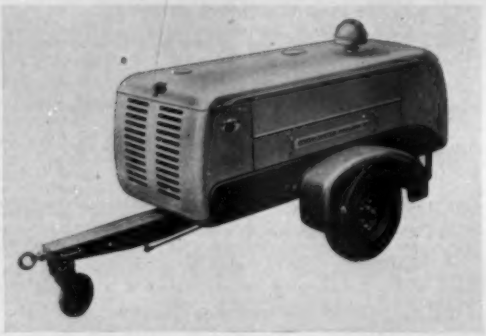


FIG. 5.—NEW ROTARY "POWER VANE" COMPRESSOR.

cylinder bore is 3.937 in. and the stroke is 4.526 in. A 12-volt electric starting system is employed.

The standard two-wheel mounting is supplied with a retractable towbar support wheel. A four-wheel mounting may, however, be supplied where required. A hinged rear cover gives access to two ¼-in take-off cocks and fuel and compressor oil fillers, while the hinged side shutters, which can be locked, are held in position by short sliding arms. The maintenance tool-box is fitted under the canopy. The overall length of the compressor including the towbar is 12 ft. 5 in., the width being 5 ft. 1 in. and the height 5 ft. 7½ in.

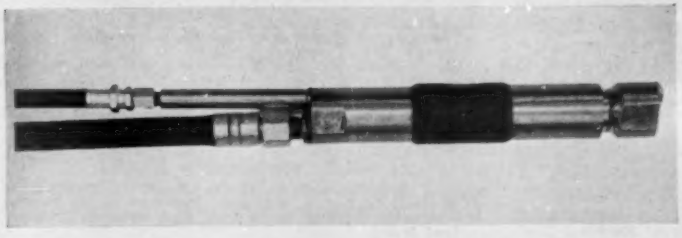


FIG. 4.—FRONT SEALING TYPE WATER INFUSION GUN.

Forthcoming Events

NOVEMBER 14

Lincolnshire Iron and Steel Institute:—Meeting at North Lindsey Technical College, Kingsway, Scunthorpe, at 7.30 p.m. "The Application of Research to Steelworks' Refractory Problems," by Dr. P. W. Clark.

Institute of Marine Engineers (South Wales Section):—Meeting at the Welsh College of Advanced Technology, Cathays Park, Cardiff, at 7 p.m. "Modern Marine Steam Turbines," by J. H. Gooch.

Institution of Production Engineers (Sheffield Section):—Meeting at the Grand Hotel, Sheffield, at 6.30 p.m. "Types of Rolls for Modern Rolling Mills," by E. Hallas and R. Lee.

Institution of Production Engineers (Halifax and Huddersfield Section):—Meeting at the Percival Whitley College for Further Education, Francis Street, Halifax, at 7.30 p.m. "Tool Wear and Machinability," by Dr. E. M. Trent.

NOVEMBER 15

Institute of Welding (West of Scotland Branch):—Joint meeting with the Institution of Structural Engineers (Scottish Branch) at the Institute of Engineers and Shipbuilders in Scotland, 39, Elmbank Crescent, Glasgow, C.2, at 7 p.m. "Universal Beams—After Two Years," by A. W. Turner.

NOVEMBER 15—DECEMBER 31

Science Museum, South Kensington, London, S.W.7:—Exhibition of historic books on mining and kindred subjects, daily 10 a.m.—6 p.m. (Sundays 2.30 p.m.—6 p.m.).

NOVEMBER 16

Midland Counties Institution of Engineers:—Meeting at the Mines Rescue Station, Ashby-de-la-Zouch (Leics), at 4.30 p.m. "The Application of Bottom-loading Belt Conveying and the Coal-sensing Device to the Midget Miner," by L. J. Mills and A. E. Bennett.

Mining Institute of Scotland:—Meeting at the Royal College of Science and Technology, George Street, Glasgow, C.1, at 5.15 p.m. "The Application of Compressed-air/Water Mixture to Prevent Ignitions of Firedamp in the Undercut," by W. Hislop, HM District Inspector of Mines.

Institution of Mechanical Engineers:—Meeting at 1, Birdcage Walk, London, S.W.1, at 6 p.m. "Teaching of Metallurgy to Engineers," by Prof. J. G. Ball.

North Wales Metallurgical Society:—Meeting at the Lecture Theatre, Flintshire Technical College, Connah's Quay, near Chester, at 7 p.m. "Non-destructive Testing," by N. F. Godwin.

Royal Society of Arts:—Meeting at John Adam Street, Adelphi, London, W.C.2, at 6 p.m. Cadman Memorial Lecture: "The Coal-mining Situation Today," by F. G. Glosson, production director, North-Western Divisional Coal Board. R. G. Baker, president, Institution of Mining Engineers, in the chair. Tickets for non-members from the secretary.

Institute of Marine Engineers (Scottish Section):—Meeting at the Institute of Engineers and Shipbuilders in Scotland, 39, Elmbank Crescent, Glasgow, C.2, at 7.30 p.m. "Medium-speed Diesel Engines for Marine Auxiliaries," by C. J. Hind.

Society of Chemical Industry (Corrosion Group):—Meeting at 14, Belgrave Square, London, S.W.1, at 6 p.m. Discussion of research papers recently published by members.

Institution of Production Engineers (Birmingham Section):—Meeting at the James Watt Memorial Institute, Great Charles Street, Birmingham, at 7 p.m. "Ceramic Tooling and its Application to Metal-cutting Machines," by R. N. Cook.

Institution of Production Engineers (Wolverhampton Section):—Meeting at Wolverhampton and Staffs College of Technology," at 7.15 p.m. "Introduction to the Flotorn Process," by F. J. Bennet.

Institution of Production Engineers (Peterborough Section):—Meeting in the Conference Room, Peterscourt, Peterborough, at 7.30 p.m. "Tube Manufacturing," by J. W. Shaw.

Institution of Production Engineers (Cornwall Section):—Meeting at Cornwall Technical College, Trevenson, Pool, Redruth, at 7.15 p.m. "The Holman Rotair Compressor," by F. B. Coombes.

Institution of Plant Engineers (Kent Branch):—Meeting at the Railway Hotel, Dartford, at 7 p.m. "Ball and Roller Bearings," by A. Hill.

NOVEMBER 17

South Wales Institute of Engineers:—Meeting at Park Place, Cardiff, at 6 p.m. "The Application of Electrical Engineering Principles in a Modern Tinplate Industry," by J. Nelsey.

Combustion Engineering Association (Western Region):—Meeting at the Seabank Hotel, Porthcawl (Glam), at 10.15 a.m. "Benson Boiler at the Steel Company of Wales, Limited," by C. Ungoed, D. H. Mustoe, P. D. Smart, and W. A. Howard, followed by a visit to the Abbey Works, Margam, at 2.30 p.m.

Society of Instrument Technology (Newcastle Section):—Meeting at Roadway House, Oxford Street, Newcastle-upon-Tyne 1, at 7 p.m. "The Evaluation of Industrial Instruments," by D. M. Bishop.

Institution of Plant Engineers (Blackburn Branch):—Meeting at the Castle Hotel, Blackburn, at 7.30 p.m. "The Automatic Control of Level in Boilers," by C. G. Scolding.

Institution of Electrical Engineers (South-East Scotland Subcentre):—Meeting at the Brucefield Hotel, Dunfermline, at 7 p.m. "Energy Resources of Scotland," by J. Henderson and C. L. C. Allan.

Institution of Electrical Engineers (Southern Centre):—Joint meeting with the Southern Branch of the Institution of Mechanical Engineers at the C.E.G.B. offices, 111, High Street, Portsmouth, at 6.30 p.m. "Engineering Education of the Technical Universities in Western Germany," by D. B. Welbourn, Prof. D. B. Spalding, and G. L. Ashdown.

NOVEMBER 18

West of Scotland Iron and Steel Institute:—Meeting at the Institute of Engineers and Shipbuilders in Scotland, 39, Elmbank Crescent, Glasgow, C.2, at 6.45 p.m. "Selection, Testing, and Use of Steel for Caterpillar Tractors," by W. Sellars and W. J. Cormack.

North East Coast Institution of Engineers and Shipbuilders:—Meeting at the Mining Institute, Newcastle-upon-Tyne, at 6.15 p.m. Symposium on "Reorganization of Some Tyneside Shipyards."

Junior Institution of Engineers:—Meeting at Pepys House, 14, Rochester Row, Westminster, London, S.W.1, at 7 p.m. "Simple Instruments for Tanks and Pipelines," by E. M. Baskerville.

Institution of Plant Engineers (Birmingham Branch):—Meeting at the Imperial Hotel, Temple Street, Birmingham, at 7.30 p.m. Mobile plant discussion group.

Institution of Mechanical Engineers (Scottish Branch):—Meeting at the Technical College, Dundee, at 7.30 p.m. "Corrosion Fatigue," by Prof. A. W. Scott.

NOVEMBER 21

Institution of Production Engineers (Sheffield Graduate Section):—Meeting at Samuel Fox & Company, Limited, Stocksbridge, near Sheffield, at 7 p.m. "Machine-tool Lubrication," by A. E. Annable.

NOVEMBER 29-30

Iron and Steel Institute:—Autumn general meeting at Church House, Great Smith Street, London, S.W.1.

NOVEMBER 29-DECEMBER 2

Corrosion and Metal Finishing Exhibition:—At the Empire Hall, Olympia, London.

National Association of Colliery Managers

NOVEMBER 15

Yorkshire Branch:—Meeting at the Miners' Welfare Hall, Brodsworth, at 3 p.m. "Analysis of Accidents During the Last Five Years," by J. Blunt.

NOVEMBER 16

North of England Branch:—Meeting at 6.45 p.m.

NOVEMBER 23

Lancashire Branch:—Meeting in the Lecture Room, Manchester Literary and Philosophical Society, George Street, R. H. Clough, HM Divisional Inspector of Mines, will introduce his report on the North Western Division for 1959.

NOVEMBER 25

Kent Branch:—Meeting at the Swan Hotel, Deal, at 7.15 p.m. "The Coal Plough," by J. McFarlane, divisional mechanization engineer, Northern (N & C) Divisional Coal Board.

NOVEMBER 28

Midland Branch:—Meeting at the Denman's Head Hotel, Sutton-in-Ashfield, at 6.30 p.m. Paper by G. A. Percival, ventilation engineer, No. 4 Area, East Midlands Divisional Coal Board.

British and World Shipbuilding

LLOYD'S REGISTER RETURNS FOR SEPTEMBER QUARTER

STEAMSHIPS and motorships of over 100 tons gross under construction in Great Britain and Northern Ireland at the end of September, according to Lloyd's Register Shipbuilding Returns, totalled 262 ships of 1,753,843 tons gross. This is 112,445 tons less than the previous quarter and is the lowest figure since June, 1946. The highest post-war figure was 2,345,408 tons at the end of 1957. The total comprises 80 ships of 573,139 tons fitting out afloat, and 182 of 1,180,704 tons still to be launched.

Commenced during the quarter were 62 ships of 179,398 tons; launched, 53 ships of 267,468 tons, and completed, 61 ships of 297,072 tons.

Vessels under construction included 53 steamships of 916,876 tons and 209 motorships of 836,967 tons. In other Commonwealth countries there were under construction six steamers of 70,231 tons and 40 motorships of 136,664 tons. Oil tankers building in Great Britain and Northern Ireland totalled 52 ships of 833,700 tons, which is 61,475 tons less than the June quarter. Total construction in the principal districts is shown in Table 1.

TABLE 1.—*Shipbuilding Construction in Hand in Principal Districts of Great Britain and Northern Ireland.*

District.	September 30, 1960.		June 30, 1960.		September 30, 1959.	
	No.	Gross tonnage.	No.	Gross tonnage.	No.	Gross tonnage.
Aberdeen ..	15	8,255	19	9,236	17	19,512
Barrow ..	3	92,500	3	92,500	2	67,500
Belfast ..	11	197,970	12	217,762	14	289,100
Bristol ..	2	1,930	4	2,830	2	3,844
Clyde:						
Glasgow ..	54	424,226	51	464,720	48	484,677
Greenock ..	19	134,488	18	128,728	23	160,620
Dundee ..	4	12,614	4	22,744	6	32,128
Hartlepool ..	2	22,250	2	22,250	3	25,710
Hull	33	12,938	36	14,753	43	15,621
Leith	6	42,220	7	43,050	9	40,826
Liverpool ..	7	92,540	7	130,045	13	130,857
Middlesbrough	8	146,010	9	163,610	9	137,632
Newcastle-upon-Tyne	33	331,440	32	323,580	33	391,476
Southampton	11	11,040	11	10,979	9	10,839
Sunderland ..	20	215,162	23	214,114	30	270,201

The sizes of steamships and motorships under construction in Great Britain and Northern Ireland included the following:—100 to 500 tons, steam nil, motor 93; 500 to 1,000 tons, steam 1 (16); 1,000 to 2,000 tons, steam 12 (16); 2,000 to 4,000 tons, steam 3 (3); 4,000 to 6,000 tons, steam 1 (3); 6,000 to 8,000 tons, steam 1 (25); 8,000 to 10,000 tons, steam nil (19); 10,000 to 15,000 tons, steam 8 (29); 15,000 to 20,000 tons, steam 3 (4); 20,000 to 25,000 tons, steam 5 (1); 25,000 to 30,000 tons, steam 8 (nil); 30,000 to 40,000 tons, 6 (nil); 40,000 tons and above, steam 5 (nil).

Steamships and motorships under construction abroad at September 30 totalled 1,226 ships of 7,057,573 tons, a decrease of 200,314 tons since the June quarter. As was then the case, no returns are available for China, East Germany, and Russia. Tonnage being built abroad has been falling since September, 1958, and is now 849,085 tons below the 7,906,658 tons then reported. Some of the leading countries abroad had the following tonnages under construction as compared with the previous quarter:—Japan, 921,537 tons (−59,489); Germany (West), 892,574 tons (−37,252); Italy, 766,187 tons (+48,940); Sweden, 749,830 tons (+31,163); Netherlands, 639,436 tons (−82,186); France, 630,563 tons (+56,100); USA, 549,771 tons (−69,686); Norway, 312,073 tons (+3,805); Spain, 284,558 tons (+3,578); Poland, 269,085 tons (+8,929); Denmark, 267,395 tons (−20,631); Yugoslavia, 209,643 tons (−16,056); Belgium, 172,778 (+15,140); Finland, 83,996 tons (−9,140); Canada, 67,900 tons (−76,832). Changes in the relative positions of these countries illustrate the uncertainties which face the shipbuilding industry as order-books become more patchy, although quarterly movements may not in themselves be significant.

Oil tankers under construction abroad total 199 ships of 3,201,664 tons, which is 261,774 tons less than the June quarter, and represents 45.4 per cent. of the total tonnage being built abroad.

Apart from those countries already mentioned, there are under construction in the world 1,488 steamships and motorships of 8,811,416 tons, of which 19.9 per cent. is being built in Great Britain and Northern Ireland. The decrease of 312,759 tons since the June quarter occurs entirely in oil tanker tonnage.

The highest post-war figure of tonnage under construction in the world was 10,205,791 in September, 1958. Oil tankers under construction in the world amount to 251 ships of 4,035,364 tons (105 steamships of 2,961,872 tons and 146 motorships of 1,073,492 tons), which is 323,249 tons less than the previous quarter, and represents 45.8 per cent. of the total tonnage under construction in the world.

Of the steamships and motorships under construction throughout the world at the end of September, 4,564,149 tons (51.8 per cent.) are to be classed with Lloyd's Register. Of this total 1,711,729 tons, representing 97.6 per cent. of the tonnage being built there, are at yards in Great Britain and Northern Ireland.

New Literature

READERS wishing to obtain a copy of any of the new catalogues, booklets, and other publications referred to below should apply direct to the address given, at the same time mentioning IRON AND COAL.

DARWINS, LIMITED, Fitzwilliam Works, Sheffield 9—A new illustrated pamphlet on the Darwins-Fimax circular permanent magnet chuck has been issued as publication M.C.7.

MORGAN REFRACTORIES, LIMITED, Neston Wirral (Ches)—Details of the wide range of Scottish firebrick manufactured by the associated company, the Douglas Firebrick Company, are given in a new brochure (RD.96).

FLUIDRIVE ENGINEERING COMPANY, LIMITED, Fluidrive Works, Worton Road, Isleworth (Middx)—November issue of the four-page Fluidrive News features the diesel Fluidrive road roller, more than 4,400 of which are in use today.

GENERAL ELECTRIC COMPANY, LIMITED, Erith (Kent)—The company's engineering group has produced three publications, dealing with roller hearth furnaces (E.75), high-temperature furnaces with hydrogen atmosphere (E.78), and induction heating furnaces (E.67).

BRITISH OXYGEN COMPANY, LIMITED, Bridgewater House, Cleveland Row, St. James's, London, S.W.1—Group news from home and abroad is very attractively presented in Pennant, the company's monthly eight-page newspaper, the October issue of which is now available.

DENVER EQUIPMENT COMPANY, 15/17, Christopher Street, Finsbury Square, London, E.C.2—Among the interesting features of the August-September-October issue of Deco Trefoil is a 12-page article on the Reynolds Mining Corporation's fluorspar mill at Eagle Pass, Texas.

SAMUEL FOX & COMPANY, LIMITED, Stocksbridge Works, near Sheffield—Forty-four pages literally crammed with articles, news items, and photographs are contained in the autumn issue of the Fox Magazine (3d.), which carries all those features that make for the ideal works magazine.

RHODES, BRYDON & YOUATT, LIMITED, Reddish Engineering Works, Stockport (Ches)—The "S.C." range of Mopumps is designed to meet the demand for pumps capable of generating high heads while delivering relatively small quantities of liquids. Publication 1614, an attractive brochure, gives full details.

NCK-RAPIER, LIMITED, 32, Victoria Street, London, S.W.1—Two attractive brochures have just been issued. Publication No. 545/1 is concerned with the 545 Sprawler, while publication No. NCKR 105 deals with cranes on crawlers. Both brochures give a great deal of information about the equipment, together with illustrations.

ASSOCIATED ELECTRICAL INDUSTRIES, LIMITED, 33, Grosvenor Place, London, S.W.1—Articles on "Diesel-electric Oil-drilling Barges," "The Design and Performance of a Hall-effect Multiplier," "A High-speed Gearbox for Canada," and "Irradiation as an Industrial Process" are among those included in the September issue of the AEI Engineering Review.

ANDERSON, BOYES & COMPANY, LIMITED, P.O. Box No. 9, Flemington Electrical Works, Motherwell—Some of the wide range of machines, jibs, cutting chains, and electrical equipment manufactured by the company are illustrated in the general catalogue, which has just been released. The catalogue has also been printed in three languages in one volume for export purposes.

TIMKEN ROLLER BEARING COMPANY, Duston (Northants)—This year, for the first time, a craft apprentice has been nominated apprentice of the year by the British Timken Division of the company. He is Ernest M. Holland, aged 21, who is now a fitter in the development machine shop. More news about the company's apprentices and much other information is contained in the October issue of Timken.

SOUTH AFRICAN IRON & STEEL INDUSTRIAL CORPORATION, LIMITED, P.O. Box 450, Pretoria—Iscor's second Graef rotor plant, which came into production at the Pretoria works recently, together with the one already in operation at the Vanderbijlpark works, will increase the corporation's steelmaking capacity by more than 500,000 ingot tons a year. The plant is the subject of a feature in the September Iscor News.

PLESSEY COMPANY, LIMITED, Wiring and Connectors Division, Cheney Manor, Swindon (Wilts)—A well-illustrated 52-page brochure describing the range of UK-AN connectors is now available. It deals comprehensively with such aspects of the connectors as the philosophy underlying their design, contact arrangements, and wiring procedures, as well as giving a wealth of information about accessory equipment, methods of mounting, special connectors, and spares.

JOHN LYSAGHT'S SCUNTHORPE WORKS, LIMITED, Normanby Park Steelworks, Scunthorpe (Lincs)—Completion of the second post-war expansion scheme was felt to be the opportune moment to produce a brochure on the Normanby Park Steelworks. The result is an elegant publication which relates the history of the Lysaght organization from its humble inception in 1857. Construction of the Normanby Park Steelworks started in 1910 and its development down the years makes a most readable story. This is indeed a publication to have—and to keep.

FINNISH IRON-ORE MINING

FINLAND's output of iron ore in 1959 was 789,000 metric tons and of iron concentrate (65 per cent. Fe) 174,261 metric tons, compared with 830,000 and 214,970 tons, respectively, in 1958.

Imports of iron ore (including ilmenite) in 1959 were 126,571 tons, while exports totalled 278,582 tons.

Iron-ore mining at Karvasvaara, near Rovaniani, which began in July, 1959, is expected to continue at an annual rate of 100,000 tons for about 10 years.

Welding Standardization Conference

The Institute of Welding announces that the first annual conference on welding standardization will be held at the institute on December 7. The theme will be the role of welding standardization in production and export, and the principal subjects for discussion will be specifications for steels and standards for welded structure. The conference is open only to individual corporate members of the institute and nominees of industrial corporate members.

COAL PREPARATION and its Future

Need for Consistency of Product

The present and future coal demands of the consumer with respect to quality, size, moisture content, and other properties of the saleable products were discussed by J. E. Chick in a paper presented to the Manchester Association of Engineers. The appended extracts are from the introduction.

COAL preparation might be regarded as an essential bridge between coal production and the consumer, although it must be remembered that in a well-ordered mine coal preparation commenced at the face, and in the years 1945-57 when output was the keynote many mining engineers often lost sight of this fact. Coal as mined today by machines which were not selective contained a varying quantity of extraneous materials such as rock, shale, and pyrites, etc., at the same time varying in quality within itself. The coal preparation engineer was therefore called upon to design commercial plants giving consideration to the following main factors:—(1) The present and future demands of the consumer with respect to quality, size, and moisture content, etc., of the saleable products; (2) washability characteristics of the raw coal to be treated; (3) limitation and efficiency of the different types of washing plants; (4) capital cost and labour, lubricants, power, maintenance, etc.; (5) mining method; and the mode of transport of coal to the washery.

Present and Future Demands of the Consumer

The demands of the consumer, stated the author, were many and varied, ranging from the coking industries' requirements to the small industrial factory, the former being interested in the coking properties of coal minus ½-in. size and the volatile matter present, factors which were unimportant to the industrial user, who probably uses chain grate stokers and wishes to buy a graded fuel, say, 1 in. to ½ in., with a high calorific value and reasonable ash fusion temperatures. Attention must be drawn to the fact that some consumers were very interested in the total moisture content of coals, from the point of view of handleability, heat loss due to water having to be evaporated, and, in the case of the coking industry, excessive moisture which caused serious damage to the coke-oven refractory brickwork. The author presented Table 1 giving a more detailed picture of consumer demands and the various features predominating in the coals supplied.

As was well known, continued the author, the demand for coal started to fall in 1956 and the decline gathered momentum in the year 1958-59. The start was initially due to the recession in the latter half of 1957, but competition from fuel oil made itself increasingly felt. In consequence, the NCB found itself at the moment in a position of output exceeding sales, of having to stock 36,000,000 tons of coal on the ground, and to revise the future "Plan for Coal" so that the target for 1965 would be 200,000,000 tons per annum as against 230,000,000 tons initially planned. Examining the position of the main consumers, only the coking industry seemed immune from the impact of oil and, providing the revival in the iron and steel industry continued, the demand should remain for coking coals. On the railways it would appear that with the large electrification programme in hand and the turnover to diesel locomotives, the demand would shift to dry slack for providing the increased electrical demand.

The Gas Board had stated that the industry was looking for alternatives to gas coal as a source of

TABLE 1.—*Coal Consumer Demands for Various Purposes.*

	Coke oven.	Gas.	Electric.	Industrial.	Domestic.
Size, in.	— 1 in.	Miscellaneous	— 1 in.	2 in. by ½ in.	+ 2 in.
B.Th.U.	Unimportant	13,000 to 14,000	11,000	12,000 to 13,000	13,000 to 14,000
Moisture, per cent.	Maximum 10	7.0	5 to 10	10	7
Volatiles, per cent.	20 to 35	30 to 33	20 to 30	29 to 34	No real limits
Ash, per cent.	3 to 7	4 to 7	20/35	8	Less than 8
Ash fusion temperature, deg. C.	1,400	1,200	1,300	+ 1,250	Unimportant
Sulphur, per cent	1.2	1.5	1.0	1.5	Unimportant
Phosphorus, per cent.	0.03	0.01	Unimportant	Unimportant	Unimportant
Coking	High	Medium	Unimportant	Low	Medium
Swelling	Low to medium	5 to 8	Unimportant	Low	Medium

gas, and methane and oil were likely to become serious competitors if the present experimental work being carried out became commercially successful.

Although the ultimate future generation of electricity might well be vested in nuclear reactors, it was expected that the demand for small coal would remain and even increase over the next 10 years should industry prosper, but one trend, however, would take place, and that was the increased demand for dry slack as against washed smalls, this having an influence on future preparation policy.

Industrial and Domestic Markets.—It was in the industrial and domestic markets, however, continued the author, where coal had an excellent chance to hold its own, providing quality, price, and service were the axiom; in fact, the marketing department of the NCB had an excellent opportunity to prove its efficiency against the powerful sales organizations of the oil companies. The Clean Air Act must make some inroads into the demand for house coals, but every effort should be made to provide smokeless fuel as an alternative. It must be admitted that the outlook was not bright for coal, but it was by no means hopeless and by any standard an industry that raised 200,000,000 tons of coal per annum was no mean undertaking.

The author went on to discuss the washability characteristics of the raw coal and the limitation and efficiency of the different types of washing plants. In conclusion, he said that there was no doubt the road ahead was hard, but with diligence and skill, the coal industry could still make its contribution to the economy of Britain and indeed it would be unfortunate if the country's only indigenous fuel were allowed to drift into obscurity.

Safety Record for US Mineral Industries

FOR the 1,100,000 workers in the US mineral industries 1959 was the safest year ever, the US Bureau of Mines reports. Fatal injuries, including some cases of total disability, declined 10 per cent. from 30 per 100,000,000 man-hours in 1958 to 27 in 1959. Total injuries, fatal and non-fatal together, declined to 17.51 per 1,000,000 man-hours of exposure, a reduction of 4.7 from the 1958 rate of 18.38.

Major factor in the new safety record, according to the bureau's director, Mr. Marling J. Ankeny, was the continued safety gain in the mineral industries employing the largest numbers. These included petroleum and natural gas (with nearly 600,000 employees), coal (with over 200,000), stone quarrying, metal mining, and metallurgical plants. Wide variations in rates are revealed by the bureau's tabulations. Among the major mineral industries, cement and coke had the lowest accident frequencies, 4.67 and 4.87, respectively, per 1,000,000 man-hours. Coal mining had the highest rate, but returned a 2.1 per cent. improvement from 45.06 to 44.09. Petroleum and natural gas, with a final rate of 9, achieved a 6.7 per cent. improvement over 1958's 9.63.

FILM ON FIREDAMP ROOF LAYERS

FIREDAMP may accumulate in a layer near the roof of a mine roadway. In an inclined roadway a firedamp roof layer may spread uphill against downhill ventilation; this does not occur if the ventilation velocity is high enough. Ventilation velocity affects the rate at which a roof layer is dispersed. These facts are stated in purely qualitative terms in a new 16-mm. colour film produced by the Safety in Mines Research Establishment, Ministry of Power, Portobello Street, Sheffield 1. Effects such as backing are illustrated by means of a model in which a stream of alcohol is emitted into a stream of water and forms a roof layer.

The film also gives some quantitative results, derived from experiments with methane in an underground roadway at Buxton. They confirm the importance of ventilation velocity in considering the roof-layer problem. The film then discusses a mine explosion in which a firedamp roof layer was involved, and shows demonstrations with a transparent model of the site of the explosion in which firedamp can be made to accumulate in the position where it is believed to have accumulated in the mine. An explosion involving an accumulation in a cavity is discussed with the help of a similar model.

The film, "Firedamp Roof Layers: Laboratory Studies of the Accumulation and Explosion of Firedamp in Roadways and Cavities," runs for 25 min. The price is £30; it is available on loan in the UK only. A number of copies for use within the mining industry are held by the National Coal Board Film Libarary.

A copy of the full text of the sound commentary is available from the SMRE.

Coal Preparation

WORK on three standards concerned with the preparation of coal has been started by the British Standards Institution.

The first, covering symbols for coal-preparation plant, is to consist of the 48 symbols recently adopted by a committee of the International Organization for Standardization. Another standard, concerned with principles and conventions for flow-sheets for coal-preparation plant, also is to be based on proposals made by an international committee.

The third standard, "Expression and Presentation of Results of Coal Cleaning Data," is to include selected data for expressing the performance of coal-cleaning plant, with recommended methods for the tabulation and graphical presentation of the test data. This standard, too, is to be based on proposals approved in principle by a sub-committee of the ISO.

NEW ENGINEERING BUILDING

at the Imperial College

SINCE 1884 successive generations of engineering students have been entering the red brick building designed by Waterhouse on Exhibition Road, and which became the City and Guilds College. Last Friday night—at a reception held at the Imperial College of Science and Technology, South Kensington, London, S.W.7, the same bell which was used to call students to lectures in 1884 was rung again to mark the transition from the old building to the new—now fully commissioned as the first part of the larger building for mechanical engineering.

Under the guidance of men like Unwin and his successors, the growth of engineering education has been phenomenal during the past 75 years. There were some 200 engineering students when the City and Guilds College was federated to form part of the Imperial College in 1907. By 1952 there were nearly 800: today there are more than 1,250 and the planned number is 1,750. The major increase during the past eight years is the result of the Government's decision to expand the Imperial College; and the number of engineering students, both undergraduate and postgraduate, could only be increased by the provision of more space and up-to-date facilities.

The new building, of which the first instalment has now gone into service, will be completed some three or four years hence. It will take the place of the old buildings on Exhibition Road, which will be progressively demolished to make room for it. It will be 440 ft. long, and on nine floor levels, and will provide teaching and research facilities for more than 350 students of mechanical engineering and for some 300 of the engineering students from other departments of the college.

As well as major groups working on applied thermodynamics (all subjects concerned with combustion and with heat and mass transfer) and applied mechanics (metal fatigue, plasticity, stress analysis, and the like), the department also includes sections studying nuclear power and production engineering.

The new building will form the eastern boundary of a new East Quadrangle, bounded on the south and west by other new buildings now in progress of construction for civil and for electrical engineering.

Designed by Messrs. Norman & Dawbarn, the building is of composite construction with structural steel and reinforced concrete frames. External treatment is similar to that adopted for the new building for the Physics Department (opened last month by Sir John Cockcroft)—white mosaic columns and spandrel walls faced with green Swedish tiles.

Book Review

Thermochemistry of Steelmaking. By John F. Elliott and Molly Gleiser. Pergamon Press, Limited, 4, Fitzroy Square, London, W.1.

THIS volume is the first of an ambitious series designed to put in a more usable form the extensive physico-chemical data relevant to iron and steel making. Unlike the well-known "Metallurgical Thermochemistry" by Kubaschewski and Evans, the present volume has virtually no explanatory material and will therefore be useful only to those familiar with chemical thermodynamics. It says much for the present quality of the British iron and steel industry that this restriction by no means excludes many of our blast-furnace and steel plant operators.

In the first section the physical properties of selected elements are tabulated, with some challenging gaps (*e.g.*, thermal conductivity of liquid iron). This is followed by the first strictly thermochemical section, in which molar heat capacity, enthalpy, entropy, and free-energy function of elements in various states are tabulated, generally at 100 deg. K intervals to 3,000 deg. K; where appropriate, enthalpy and free-energy changes for formation from the standard state and the logarithm of the equilibrium constant are also given. Data above 2,000 deg. K are generally extrapolated assuming constant heat capacity. Tables are supplemented by graphs. In the next section the standard heats and free energies of formation for carbides, nitrides, oxides, phosphides, silicides, and sulphides are similarly tabulated and shown graphically: data on relevant equilibrium gas ratios (*e.g.*, CO/CO_2 for oxides) would have been an advantage. The final section gives tabulations and graphs of vapour pressures of the elements and compounds.

The value of this series and of its good first volume would be increased if the later volumes appear quickly, for, as the authors in their foreword point out, the need is to get the available data on steelmaking physical chemistry into one place. One wonders, also, if the authors would not have done better to have invited contributions from workers studying specific properties and substances instead of appealing to them now for comments on the finished book.

ITALY'S IRON-ORE PRODUCTION in 1959 totalled 1,240,000 metric tons. Imports were 1,634,227 metric tons.

New Members for IWS Council

COUNCIL of the Industrial Welfare Society has a new member in Mr. J. O. Blair-Cunynghame, a joint deputy chairman of the Royal Bank of Scotland, a director of the Provincial Insurance Company, Limited, and a former staff member of the National Coal Board.

MR. J. O. BLAIR-CUNYNGHAME.

Mr. Blair-Cunynghame, who was elected at the annual meeting of IWS on Tuesday, resigned from the NCB at the end of last year in order to return to his native Scotland. He succeeded Sir Andrew Bryan on the board in 1957, having joined the NCB in 1955, and was the first to hold the post of director-general of the staff department, an office set up on the recommendation of the Fleck Committee. Previously he had been chief personnel officer for seven years of British Overseas Airways Corporation and for a year after the war he served in the Foreign Office.

He is a Fellow of the Institute of Personnel Management and on the council of the National Institute of Industrial Psychology. He was a member of two joint committees set up under the Department of Scientific and Industrial Research and the Medical Research Council, concerning human relations and individual efficiency in industry.

Also elected to the council of the Industrial Welfare Society is Mr. Alfred Robens, deputy chairman and chairman-designate of the National Coal Board and former Labour MP for Blyth. Mr. Robens was Parliamentary Secretary to the Ministry of Fuel and Power from 1947 to 1951 and Minister of Labour from April to October, 1951.

Expert's View of US Steel Industry

MONDAY saw the return of Mr. Edward T. Sara, commercial and economic adviser to the United Steel Companies, Limited, from a fact-finding mission in the United States. The main purpose of the mission was to study the fall in American steel consumption, compared with industrial production.

Mr. Sara concluded that the US steel consumers were living off stocks—as was the case in the British recession two years ago. In consequence, the US steel industry is working at just over 50 per cent. capacity with resultant heavy unemployment. "The Americans do not expect any upturn in business generally until the middle of next year," Mr. Sara said. "Even so, nobody gives the impression that they have a depression on their hands."

COAL DEPOSITS estimated at 2,500,000 tons have been discovered in Greenland—enough to supply the island's needs for the next 50 years.

"Momentousness" about New RTB Plant

EXPANSION of production by stages up to probably 10,000,000 tons a year would be possible on the Llanwern steelworks site, said Mr. Henry F. Spencer, managing director of Richard Thomas & Baldwins, Limited, last Friday. Mr. Spencer, after whom the new works near Newport are named, was addressing members of the Industrial Association of Wales and Monmouthshire.

The works, he said, would bring an abundance of prosperity to Monmouthshire and Newport. In the first stage alone in the region of £5,000,000 a year would be paid out in direct wages and salaries, and an additional £5,000,000 a year would go in wages and salaries for servicing the works with houses, shops, coal, national and local transport, docks, and public services.

"There is a momentousness about this plant providing my company does not falter in its opportunities. The works will have a profound impact upon Monmouthshire—an impact that cannot be limited to Monmouthshire. It extends to the whole of the steel industry and to the whole country," Mr. Spencer said.

"We selected Llanwern to house this great plant for many reasons. There are first-class dock facilities. Imported ore can be assembled and dealt with economically. It is within economic distance of supplies of coal, limestone, and domestic ores. It has water. Our manufactures can be exported from Newport to all parts of the world. The internal transport system—road and rail—can be expanded to cope with its needs. Our best domestic markets are within easy access and distance, with low delivery cost.

The Llanwern site, he added, would enable RTB to meet all competition without subsidies. Other engineering industries would expand and there would be heavy expenditure locally on many kinds of supplies. His company would pay enormous rates.

Dealing with labour for the new works, Mr. Spencer said that Llanwern did help to create a seller's market for labour. But men could be recruited from outside districts, from the steel industry where men might want to change their jobs or places of living, from the pool of labour already imported from outside to work on the site, and from pockets of intractable unemployment. "And, of course, we are under a moral obligation to men who are or may be rendered redundant in the steel industry," he said.

Southcros Acquires Springmakers

INDUSTRIAL holding company, Southcros, Limited, has bought the capitals of Anderton Springs, Limited, Bingley (Yorks), and its associate company, Dee-Kay Engineering Company, Limited. The consideration was £74,000 cash, 74,000 6½ per cent. £1 preference shares, and 92,000 5s. ordinary shares in Southcros. Current market values makes the total consideration £422,000.

The two trading companies manufacture springs, spring fastenings, etc., and their combined profits for the current year, before tax, are estimated at not less than £75,000, compared with £57,000 for 1959.

RAWLPLUG COMPANY, LIMITED—Interim dividend for the year ending December 31, 1960, is 7½ per cent. compared with the equivalent of 5 per cent.

NEW LEASE OF LIFE

For Sexagenarian Shirebrook Colliery

NINETY years' more "life" will be added to the 64-year-old Shirebrook Colliery, just north of Mansfield, as a result of a £4,350,000 reconstruction scheme now in progress, states the East Midlands Divisional Coal Board. It will make available for working 80,000,000 tons of good quality coal and, at the same time, enable both production and productive efficiency to be increased.

From the time of the Boer War until recent years all Shirebrook's output has come from one seam, the famous Top Hard. This, however, is now nearly worked out. The reconstruction scheme, which includes the deepening of No. 2 shaft by 750 ft. to a total depth of 2,442 ft., will mean the development of a completely new seam, the Deep Soft, and the extension of workings in another, the Main Hard.

All the output will be concentrated to a new pit bottom circuit at the No. 1 shaft and raised in mine cars. In 1963, No. 2 shaft will be used entirely for men, materials and stone.

Complete Electrification

There will be complete electrification at the colliery and new, streamlined handling arrangements will enable the pit to deal with the ultimate output of 3,600 tons daily, nearly 1,100 tons more than at present. A new coal preparation plant will be an important part of the reconstruction.

Underground, pit bottom reorganization has been proceeding for some time. On the surface, work has just started on the construction of new headgear, winder house, heapstead, and other associated work at No. 1 shaft. The new concrete headgear is expected to be in use early next year and by the summer the new electric winding engine should be in commission.

By the time the scheme is complete, most of the pit's 50-year-old surface equipment will have disappeared, and Shirebrook will be virtually a new mine.

More Transport Needed for Mining Equipment

COMPLAINTS by the National Coal Board of the late delivery of mining equipment, were quoted in support of an application by British Road Services, Gloucester, to add eight articulated vehicles to its licence. Mr. R. J. Sexton, movement controller of Dowty Mining Equipment, Limited, Ashchurch, said demands by the NCB for pit props had risen from 2,500 a week in April, to 4,500, and would shortly reach peak production of 7,000. Only BRS could give a service sometimes requiring short notice transport, when there were roof falls and similar emergencies, he claimed.

At the request of the Coal Board, the Dowty Roofmaster mechanical hydraulic roof was being supplemented by a Roofmaster Minor, specially designed for mines with thin seams and the objective was 100 faces a week by March, 1961. After an undertaking by BRS that eight of its vehicles would normally only be used for Dowty traffic, the application was granted.

Revision of Pit Shifts Under Consideration

REVISION of working shifts was under consideration in the North Staffordshire Area of the West Midlands Divisional Coal Board, Mr. R. R. Job, Area industrial relations officer, told a questioner at a meeting of the North Staffordshire branch of the Institution of Mining Engineers on Monday. Speaking as a member of a panel answering questions from mining students, he said that colliery consultative committees which had been asked to submit views for the retention of manpower had responded with a considerable number of recommendations which were being considered.

Asked whether some form of incentive bonus for lower grade workers could be introduced in view of the present manpower wastage in the industry, Mr. J. Hebblethwaite, deputy Area production manager (operations), said that serious consideration had been given to the question of incentive bonuses on all kinds of work. Discussing the effort being made to reduce the amount of small coal mined, Mr. H. J. Widdowson, Area general manager, said that the demand for large coal would greatly exceed supply and the country would be very short of that type of coal this winter. The Area marketing manager, Mr. D. M. Fletcher, assured questioners that there was no difficulty in selling all the Area's coal output.

Other members of the panel were Mr. R. W. Scurfield, Area deputy production manager (planning), Mr. W. C. Colclough, Area coal preparation engineer, and Mr. J. Barnes, Area mechanical engineer.

Leeds University Mining Society

GUEST of honour at the annual dinner of the Leeds University Mining Society held last week was Prof. J. T. Whetton, head of the university's mining department until last month. He was presented with a television set by Major D. H. Currer Briggs, chairman of the University's mining advisory committee, on behalf of the society and friends.

Speakers at the dinner included Mr. W. H. Sales, chairman of the North-Eastern Divisional Coal Board, Mr. F. G. Glossop, production director, North- Western Divisional Coal Board, and Mr. W. L. G. Potts, lecturer in mining at the university.

STEEL PRODUCTION in the US this week is estimated by the American Iron and Steel Institute at 1,464,000 tons, compared with 1,478,000 tons (revised) last week and 1,291,000 tons in the corresponding week of last year.

Obituary

SIR ERNEST SMITH

FUEL consultant and a well-known authority on the gas industry, Sir Ernest Woodhouse Smith died on Monday. Sir Ernest, who was 76, was educated at Arnold School, Blackpool, and Victoria University of Manchester. After a year as a chemist to a gold dredging company in Saskatchewan he was appointed research chemist to the Institution of Gas Engineers, Leeds University and held similar posts with gas undertakings until 1920 when he was appointed technical director of the Woodall-Duckham Construction Company, Limited, a post he held for 24 years.

Among many appointments he had held were director-general, gas supply, Board of Trade, honorary secretary to the World Power Fuel Conference, chairman and president of the Society of British Gas Industries, president of the Institute of Fuel, technical adviser to the District Valuation Boards of the Coal Industry (Coke Ovens), chairman of the Industrial Coal Consumers' Council for 10 years, honorary treasurer and president of the National Smoke Abatement Society, and president of the Fuel Luncheon Club.

Sir Ernest, who was knighted in 1947, was a Fellow of the Royal Institute of Chemistry, a Fellow of the Institute of Fuel, and the author of many technical papers.

MR. R. H. SWALLOW

THE death has occurred at the age of 55 of Mr. Ralph Henry Swallow, manager of Morton Colliery (Derbyshire). A native of Co. Durham he studied at Nottingham University and then became an engineering student with the former Clay Cross Company, Limited. Following the example of his father who had been a mining engineer, he entered the mining industry.

In 1934 he became manager of Grassmoor Colliery and in 1937 he was also the colliery agent. From 1940 until 1944 he was agent for Clifton and Pentrich Collieries and in 1945 he returned to Grassmoor as agent-manager. Four years later he became manager at Pilsworth Colliery where he stayed for 10 years before transferring to Morton.

The funeral took place on Thursday of last week of Mr. ALEC GARRATT, who was killed in a road accident the previous week. Mr. Garratt had been with the English Steel Corporation, Limited, for 43 years; since 1950 in the export department.

Mr. THOMAS HALSTEAD, formerly general secretary of the Bolton and District branch of the Lancashire and Cheshire Colliery Official Staffs Association and of the National Federation of Colliery Officials has died at the age of 78. A member of Bolton Town Council from 1920 until his retirement he was made an alderman in 1929 and was mayor in 1937.

Mr. KENNETH CARTER SHAW, who died last week, was for many years director of G. Hinchliffe & Company, Limited, coal merchants and factors, etc., of London, W.2, until his retirement nine years ago. He spent his early life in Yorkshire, where he was a colliery manager. Mr. Shaw was a past president of the Coal Merchants' Federation of Great Britain.

Prof. GEORGE W. O. HOWE, Emeritus Professor of Electrical Engineering, Glasgow University, died on Monday. He was 85. When he retired in 1946 he had held the James Watt Chair of Electrical Engineering for 25 years. Prof. Howe, who received his practical training with Siemens Bros., Limited, at Woolwich, and at the Berlin works of Siemens-Schuckert, was, before his Glasgow University appointment, head of the department of electrical standards and measurements at the National Physical Laboratory, Teddington. He received the honorary degree of LL.D. of Glasgow University in 1947 and was awarded the Faraday Medal of the Institution of Electrical Engineers four years ago.

The death has occurred of Mr. WILLIAM SMITH, chief engineer for 21 years of the Sheepbridge Company, Limited, iron and steel makers, of Chesterfield. He supervised the engineering work of the installation of the new blast-furnace plant in 1951. After an apprenticeship in engineering, he became works engineer with Cammell Laird & Company (Shipbuilders & Engineers), Limited. In 1918 he became chief engineer of the works and collieries of the Wigan Coal & Iron Company, Limited, and from 1921 until 1930 he was chief engineer at Seaham Harbour Colliery (Co. Durham) for Londonderry Collieries, Limited. There he was responsible for sinking a new shaft at Vane Tempest Colliery. Mr. Smith had also acted as consultant to the Renishaw Iron Company, Limited.

Duke of Edinburgh Urges Extended Technical Training

CERTIFICATES of craftsmanship were presented by the Duke of Edinburgh at the luncheon of the Gauge and Toolmakers' Association in London on Tuesday. He referred to his scheme to get the City and Guilds of London Institute to organize a Commonwealth technical training week and emphasized that, with the right extended training scheme "every apprentice would carry a chairman's pen in his tool kit."

Technical training, he said, should be available throughout a man's career, but no industry should concentrate solely on technical qualifications to the neglect of administration at all levels.

Research "was not something which you use just to find something new," the Duke said. "It is there to produce a steady stream of minor improvements and refinements, and if you put sufficient coins into the machine and pull the handle often enough you may also hit the jackpot."

Colvilles Opens New Training Centre

APPRENTICE training centre built by Colvilles, Limited, at Mossend (Lanarkshire) at a cost of £250,000 was opened last Friday by Mr. John S. Maclay, Secretary of State for Scotland. The centre has facilities for training 150 boys in engineering, foundry work, pattern making, technical drawing, and the control of overhead cranes. It will provide training for the craft apprentices, junior technicians, and undergraduates from the various works of the company.

Sir Andrew McCance, chairman, said that the company also had a scheme in mind to bring the semi-skilled men within its training arrangements. "There are many operators, who are not highly skilled, but who can have quite an influence on the level of steel output which can be obtained," he said.

IRON AND STEEL TRADE

OPERATING at a record rate the steel industry's present high level of production is likely to be maintained at least until the end of the year. Output of some of the principal steelmakers is such that an annual rate of production of 26,000,000 tons is more than a vague possibility. The effect of the motor industry recession has been largely confined to South Wales and the Midlands where the pressure for sheet and other flat products has lessened, but even in these areas there is no immediate prospect of a cutback in production.

Pig-iron

Though business continues exceptionally brisk most makers could increase on present deliveries if the demand warranted it. Substantial tonnages of basic pig-iron are being taken up by the steelworks, and consumers of the low phosphorus irons are well served, any shortage of a particular brand being adequately covered by irons of equal quality and analysis from other sources.

There has been an increased demand for hematite pig-iron but supplies are adequate, as are those of refined iron.

Ferro-alloys

Ferro-tungsten remains unchanged in price, and is a rather quiet feature, but most other items are receiving reasonable attention, especially ferro-silicon. There is steady support for ferro-phosphorus and ferro-sulphide, and fair demand for calcium silicide.

Ferro-chrome is active, and there is a good demand for ferro-manganese and silico-manganese.

Semi-finished Steel

Most re-rollers report a continued good demand for small bars and light sections and all supplies of reinforcing rods are taken up. There are few mills that have not sufficient work to ensure full capacity output or that could not do with more skilled and semi-skilled labour.

The shortage of carbon and alloy steel billets cannot yet be overcome, but there is plenty of steel semis in the lower carbon ranges. Demand for suitable re-rolling defectives and crops from the steelworks is maintained.

Finished Steel

Any new business, particularly for all kinds of sections—angles, channels, joists, etc.—is accepted on an extended delivery basis and rolling dates have had to be lengthened for plates. The position in regard to cold reduced sheets has eased, but makers can still look forward to disposing of capacity outputs.

The situation has not changed in respect of fulfilling the comparatively meagre call for colliery requirements, and considerably more business could easily be absorbed in current and forward programmes.

Good Year for Duport, Limited

SUBSTANTIALLY higher profits for the year ended July 31, 1960, are announced by Duport, Limited, Tipton (Staffs). Group profits rose from £2,068,960 to £2,614,036, and the taxed balance from £1,047,437 to £1,395,642. The final dividend is increased from 12½ to 15 per cent.

It is proposed to make a one-for-two scrip issue which will require £1,887,247 of reserves. The profit statement includes no figures for the Llanelly Steel Company (1907), Limited, which was not acquired until August 2 of this year.

Board of Brooke Tool Automation Appointed

FOLLOWING the announcement that the machine, jig, and fixture division of the Brooke Tool Manufacturing Company, Limited, was to be reconstituted as Brooke Tool Automation, Limited, the board of the new subsidiary has now been appointed. Mr. A. G. B. Owen, chairman of the parent company, has been appointed chairman, with Mr. H. S. Holden, managing director of the parent company, assuming the same position with the subsidiary.

Mr. Harry H. Evans, until recently general factory manager and director of personnel development at Cincinnati Milling Machines, Limited, and a director of Horden Mason & Edwards, Limited, has been appointed director and production manager. Mr. K. G. Walton, who has been manager for several years of the machine, jig, and fixture division of Brooke Tool Manufacturing, becomes a director and general manager. Mr. E. W. Hancock, an associate consultant member of Production Engineering, Limited, and Mr. E. W. B. Owen complete the board of the new company.

Engineering Centre to Move

SAID to be the only permanent comprehensive engineering exhibition in Britain, the Engineering Centre, Birmingham, is to celebrate its centenary next year by moving from its home for many years in Stephenson Place to the Masonic Temple, a £200,000 building in Broad Street. It is understood that between £50,000 and £60,000 will be spent by the Engineering Centre on alterations and extensions to the Masonic Temple.

Initial financial support for the venture will be provided by the Engineering Centre, but a new non-profit distributing company, known as the Engineering & Building Centre, is also being formed. Work on the new centre is expected to be completed by next autumn.

JOHN WALLACE & SONS, LIMITED, agricultural machinery makers, etc., of Glasgow—It is proposed to reorganize the capital through the creation of 400,000 6½ per cent. redeemable cumulative £1 preference shares. The 250,000 6½ per cent. cumulative £1 preference shares are to be converted into 2s. ordinary shares. The chairman, Mr. Charles Kemp, states that the larger part of profits will in future be derived from investments in a number of widely diverse businesses and that the undertaking has to a large extent become a holding company.

Coalfield News

TOTAL of the Six Bells Colliery disaster fund now exceeds £95,500.

SHIPMENTS of coal and coke through the port of Garston during September totalled 92,434 tons.

THE ROYAL HUMANE SOCIETY'S TESTIMONIAL for his bravery in saving a 10-year-old boy from the sea in February, has been awarded to Mr. Sam Herd (26), a Kirkcaldy miner.

ANTHRACITE PIT, sunk by the National Coal Board at Cynheidre Colliery, near Llanelly, at a cost of £18,000,000, will be commissioned next Thursday by Mr. H. E. Collins, production member of the NCB.

DISPUTE which had been interrupting work at Darfield Main Colliery (Yorks) for over a fortnight, was settled in a 90-minute discussion last Friday. The 1,400 men at the pit resumed normal working on Monday.

FIRST PRIZE in the original section of an art competition run by the welfare committee of the Northern (N&C) Divisional Coal Board was won by Mr. T. P. Routledge (60), who has worked at Ellington Colliery since he was 14.

WORKERS AT Darfield Main Colliery, Wombwell, who stopped work last Friday, November 3, over a wages grievance affecting a few packers, returned to work on Monday so that discussions with the management could be resumed.

COAL will no longer be shipped abroad from the docks of Ellesmere Port (Ches), the Manchester Ship Canal Company has announced. For the past 32 years, coal, mainly from North Wales, has been shipped all over the world from this port.

Mr. GROSVENOR JENKINS, a safety officer at the Risca, Nine Mile Point, and Wyllie collieries, Monmouthshire, was killed when he was involved in an accident with a journey of trams underground at North Pit, Wyllie, last Friday. He was 54.

OLDEST retired miner in Oakley (Fife), Mr. David Herd, recently celebrated his 94th birthday. Five generations of his family have been miners—his son, David, is a deputy at Minto Colliery. Mr. Herd started work at the age of 11 and retired when he was 70.

INCREASED EFFORTS to set up new industries in Northumberland to compensate for the closing of collieries have been urged by the County Council. At a council meeting it was stated that industrial stagnation was likely in south-east Northumberland within 12 to 18 months.

AFTER 51 years in the mining industry, 50 of them at Wellesley Colliery (Fife), Mr. Alexander Davidson secretary of the colliery branch of the National Union of Mineworkers, has retired. He has been a NUM official since 1926 and secretary of the Wellesley branch since its inception.

DECISION of Goldborne (Lancs) Council to heat 106 bungalows with oil was criticized by Mr. Sam Unsworth, miners' agent for South-West Lancashire, last Friday. He said that half the male population in the area was employed in collieries and the council's decision was shortsighted.

STORY of the 1869 strike of Wearmouth miners which led to the formation of the Durham Miners' Association is the subject of the recently-published book, A Wearside Mining Story, by Cllr. John E. McCutcheon. Mr. McCutcheon, who is a miner's son, himself worked in the mines.

SOUTH WALES AREA of the NUM has submitted a report on proposed amendments to the conciliation agreement between the union and the NCB to the national executive. The Area does not want the present wage increase claim to go straight to arbitration in the event of rejection by the board, preferring the right to strike if necessary.

"IT ISN'T WORTH my while having a job. I get more money by staying at home." A colliery pithead gear attendant, Jack Cooper (34), told Chesterfield magistrates last week. He gets £6 17s. a week unemployment benefit, £1 3s. from National Assistance, and £2 18s. family allowances. When he last worked in May, 1957, he drew £9 10s. before stoppages.

ACCIDENT which killed Mr. George Leslie Smith (48) at Blidworth Colliery (Notts) "wouldn't happen again in a thousand years" a Mansfield inquest was told. A fall of dirt knocked a 6 ft. wooden bar out of the hands of another miner on to a moving conveyor belt which thrust the bar against Mr. Smith, pinning him to a roof prop. The jury returned a verdict of Accidental Death.

Dwindling Coal Stocks—and Rising Exports

FURTHER decline in the amount of coal stocked at collieries and open-cast sites brings the total to 32,832,000 tons—nearly 3,000,000 tons less than at this time last year. At the same time transport, particularly by rail, appears to be flowing much more freely and consumers are steadily building up stocks, though, at 14,822,000 tons, distributed stocks have another 1,800,000 tons to go before they reach last year's comparable figure.

Exports also show a gratifying rise and, by the end of the year, could show a 50 per cent. increase on last year's figure of 4,334,000 tons. They have already reached 4,248,000 tons.

There were 586,000 wage-earners on colliery books on October 29, against 640,400 on October 31, 1959, the numbers engaged at the coal face being 221,400 and 247,500 respectively. Total absenteeism (all workers) in the week ended October 29 was 14.79 per cent., compared with 14.47 per cent. in the week ended October 31, 1959. Output at the face was 4.058 tons and overall 1.423 in the week ended October 29, compared with 3.817 and 1.364 tons in the week ended October 31.

The following table gives (in tons) the output of saleable mined coal by division in the week ended November 5, and the tonnage lost through all causes (holidays, disputes, and go-slows):—

Division.	Week ended November 5, 1960.		Week ended November 7, 1959.
	Total output.	Tonnage lost.	Total output.
Scottish ..	349,500	5,900	386,200
Northern (N&C) ..	248,300	500	253,600
Durham ..	459,600	2,400	479,900
North-Eastern ..	844,700	12,100	859,600
North-Western ..	246,800	11,700	286,900
East Midlands ..	887,100	—	912,500
West Midlands ..	276,800	100	305,600
South-Western ..	380,300	11,200	409,300
South-Eastern ..	30,800	—	35,000
Great Britain—			
Deep-mined coal ..	3,723,900	43,900	3,928,600
Other deep-mined (including licensed mines) ..	40,300	—	57,900
Open-cast coal ..	112,500	—	198,000
TOTAL ..	3,876,700	43,900	4,184,500

THE COAL TRADE

STEADINESS is the keynote of demand, both for industrial and domestic coal, although the call for the former is expanding, while that for the latter has subsided somewhat since winter prices came into force, giving merchants with stocks heavily depleted by the late summer and early autumn rush a chance to rebuild reserves—a vital task in view of transport problems looming ahead. Best qualities of all grades fall far short of requirements in some areas, and substitutions are not well received by domestic consumers, whose complaints cause merchants much anxiety.

SCOTLAND

Glasgow—Frost over much of the country and snow in several Highland areas have resulted in a sharp increase in space-heating loads and a consequent rise in demand for house coal. During October merchants added a fair tonnage to their stock and started the official winter with 301,000 tons. This compared with 302,000 tons in 1959, but whereas last year demand was quiet until the turn of the year sales are already much higher at retail level. There is a strong feeling in the trade that many householders have much less than their customary stock, and a strong demand is anticipated if the weather remains cold. Merchants are having difficulty in securing all the tonnage they require, and it is particularly apparent that newer entrants to the trade will find expansion a far from easy task.

After a slow period in the autumn anthracite stove nuts are in strong demand, and as supplies fall short of requirements hard coke nuts and gas coke meet a better demand, stocks of each being very comfortable. Patent fuels also move more freely.

In the industrial sector consumption is rising, and fresh-mined supplies are clearing satisfactorily. Singles are tight, and doubles and trebles have little margin to spare. Pearls, too, have recovered from their previous quiet spell, while larger throughputs than a year ago at electricity stations ensure a satisfactory clearance of washed and untreated smalls. Coking coal consumption is fully maintained, and to meet requirements some of the accumulated surplus of this grade of smalls left with the divisional board last year is being uplifted. Bituminous duff presents few problems, and a good export business is passing in low volatile grades. Metallurgical coke supplies are well maintained.

Fife and Lothians—Production remains steady in both zones, but is insufficient so far as large coal is concerned to meet all requirements. An excellent trade is passing in doubles, particularly for the domestic trade. Industrial sorts are comfortably balanced against demand.

Whessoe to Open Factory in France

EXTENSION to the 1948 agreement between Whessoe, Limited, Darlington, and the Shand & Jurs Company, California, which allowed Whessoe exclusive manufacturing rights for S. & J. tank fittings in the UK, now permits Whessoe to manufacture the fittings in France and to sell them in the Common Market and the French Union.

Land has already been bought in Calais for the building of a plant which will be owned by Whessoe, SA, the company's French subsidiary now in the process of formation.

Coal Chartering

THERE is little improvement in the general situation of coal markets and once again the main interest and demand from Hampton Roads is for Japanese destinations. November/December tonnage of 14,000 tons has secured $8.20 to Japan and a 9,000-tonner for November 20/December 10 to Yawata at 10 cents extra with inquiry maintained.

As far as the Continent is concerned, a 14,000-tonner for November has been fixed from the Roads to A.R.A. at 26s. with charterers' option for German North Sea at 27s. 6d., and this is possibly repeatable, subject to stem. Owners might obtain a little more on the basis of relet cargo. Roads/West Italy reports $3.70 for an 18,000-tonner. Tonnage has been fixed to Brazil, Mobile-Santos, at $5.75 for 9,500 tons November 5/15, and Philadelphia-Rio 8,000 tons same position at $5.15, combined with 2,000 tons from Hampton Roads to Rio at $6.00.

The UK market is quiet and the nominal value from Wales to West Italy appears to be about 23s., subject to size and position, and at this rate a 4,000-tonner for December has been fixed. Poland/Rio de Janeiro paid 37s. for 9.500 tons for early November with gross discharge.

New Company to Manufacture Sinterlink

NEW company which will manufacture sintered friction materials to be sold under the registered trade mark "Sinterlink" has been formed by the Morgan Crucible Company, Limited, London, S.W.11, and British Belting & Asbestos, Limited, Cleckheaton (Yorks).

Sinterlink materials have been developed by Morgan Crucible and are produced at its London factory where the new company will be located. Sales throughout the world will be handled by the Mintex Division of BBA as sole concessionaires.

The £140,000 capital of the new company will be divided between Morgan Crucible (100,000 £1 shares) and BBA (40,000 £1 shares). Morgan Crucible is represented on the board by the chairman, Mr. H. I. Matthey, the managing director, Mr. J. H. Dawson, and Mr. I. Weston Smith, and British Belting & Asbestos by Mr. R. A. Barber and Mr. P. H. A. Mount.

FLOATING grain elevator, capable of handling 300 tons of grain an hour, is to be supplied by Simon Handling Engineers, Limited, Stockport (Ches), as part of the £4,750,000 development scheme for the King George Docks, Hull.

Board Changes

New Chairman of Appleby-Frodingham

CHANGES are announced in the boards of two of the companies within the United Steel Companies, Limited. Lt.-Cmndr. Geoffrey Watson Wells, managing director (production) of United Steel, has been appointed chairman of APPLEBY-FRODINGHAM STEEL COMPANY, of which he was director and general manager. He is succeeded by Mr. J. D. Joy, director and deputy general manager of the branch.

The board of the DISTINGTON ENGINEERING COMPANY, LIMITED, branch of United Steel, has been joined by Mr. A. E. Bell and Mr. R. Lancaster. Mr. Bell becomes director and commercial manager and Mr. Lancaster director and general works manager.

BRITISH GLUES & CHEMICALS, LIMITED—Mr. P. W. Bewley has joined the board.

BARROW HAEMATITE STEEL COMPANY, LIMITED—Mr. A. N. Bicket has resigned from the board.

WORTHINGTON-SIMPSON, LIMITED—Mr P. B. H. Brown has succeeded Sir Samuel R. Beale as chairman.

METALASTIK, LIMITED—Mr. H. J. Billing, sales manager since 1956, has been appointed sales director.

DARLINGTON WIRE MILLS, LIMITED—Mr. T. J. Jones has resigned from the board and from those of the subsidiaries.

E.C.D., LIMITED—Mr. H. A. Barratt, chief engineer of Wallace & Tiernan, Limited, the parent company, has joined the board.

S. GUITERMAN & COMPANY, LIMITED—Mr. F. G. Watts has been appointed to the board from which Mr. P. J. Davis has resigned.

RHYMNEY ENGINEERING COMPANY, LIMITED—Mr. Geoffrey B. Taylor has been appointed a director in place of Mr. W. Messer, who has retired.

W. C. HOLMES & COMPANY, LIMITED—Mr. A. J. M. Henshaw, a director and general sales manager, has been appointed assistant managing director.

BRITON FERRY STEEL COMPANY, LIMITED—Mr. W. H. R. Davies, who has been with the company since 1937 and has been sales manager for some years, has been appointed to the board.

MOUNTSTUART DRY DOCKS, LIMITED—Mr. William Ferguson, secretary, has been elected to the boards of the company and its subsidiaries. He joined the company in 1935 and was appointed secretary in 1950.

PARSON & CROSLAND, LIMITED—Sir Charles V. Fitton has been appointed chairman in succession to the late Brig. W. H. Crosland. Mr. C. R. H. Crosland and Mr. K. F. Suggett have been appointed joint managing directors.

GLOUCESTER RAILWAY CARRIAGE & WAGON COMPANY, LIMITED—Mr. J. M. W. North has been appointed a director and Mr. T. O. M. Halliday has retired from the board. Mr. A. Etchells has been appointed secretary to succeed Mr. R. H. Beach.

SAUNDERS VALVE COMPANY, LIMITED—Mr. P. T. Stephens has been appointed deputy chairman, while still remaining joint managing director with Mr. A. L. Trump. Mr. P. C. E. Rose, an executive director, has been appointed general manager of the industrial divisions.

INDUSTRIAL TECHNICS (SOUTHAMPTON), LIMITED—Following the acquisition of the company by Dowding & Doll, Limited, the chairman of that company, Mr. A. G. Dowding, and its directors, Mr. R. H. French and Mr. C. D. Hunter, have joined the board. Mr. D. L. Wiggins continues as managing director.

BURTONWOOD ENGINEERING COMPANY, LIMITED—Mr. John Boardman has been appointed chairman and chief executive in succession to Mr. R. Dutton Forshaw, who has retired. Mr. Bernard C. Shrubsole, joint managing director of the parent company, U.S. Industries, Inc. (Great Britain), has been appointed to the board.

SIR LINDSAY PARKINSON & COMPANY, LIMITED—Mr. T. E. Barker, joint managing director, has been appointed deputy chairman. Mr. F. V. Osborne, and Mr. A. W. Robinson have been appointed joint managing directors. Mr. H. S. Frost has resigned as joint managing director and from the board for health reasons.

WILLIAM DOXFORD & SONS (ENGINEERS), LIMITED—The board of the parent company, William Doxford & Sons, Limited, has agreed to release Mr. Robert Atkinson, managing director of the company, from his contract with effect from February 28, 1961, to take up an appointment as managing director of the engineering division of Tube Investments, Limited, with effect from March 1, 1961.

Loan Approval for Dunkirk Steelworks

EXTRA-ORDINARY general meeting of the French steel concern Union Sidérurgique du Nord de la France (Usinor) has approved a loan or several loans to a maximum combined value of NF 200,000,000 for the construction of the Dunkirk steelworks complex. The board announced later that it was to make immediate use of this decision in floating a loan of NF 40,000,000.

The Dunkirk operating company, Société Dunkerquoise de Sidérurgie, now a 100 per cent. subsidiary of Usinor, is to start output in the summer of 1962. The plant will initially consist of a 8.50-metre blast furnace, oil injection plant, two 125-metric ton oxygen convertors and a boiler plate rolling mill. In 1963 a second blast furnace, a third 125-metric tons oxygen convertor and a broad-band rolling mill will be added.

Also to be built on the coastal site are an agglomeration plant for 1,500,000 annual metric tons of ore, a 1,800-metric ton mixing unit and a semi-products works.

Scottish Shale Oil Industry's Situation Worsens

BECAUSE the situation in the Scottish shale industry has further deteriorated, Scottish Oils, Limited, is to reduce its manpower by more than 300. The company states that in April, 1958, it was hoped that what remained of the industry would be able to operate for a considerable time. The situation, however, had worsened and applications for additional assistance from the Government by way of increase in duty preference or some other relief had been unsuccessful.

It is proposed to close Niddry Castle crude oil works and to reduce the production of shale by closing Hermand mine and to make other adjustments. This will reduce the number employed from 2,200 to 1,840 within the next six months.

COMPANY NEWS

INTERNATIONAL NICKEL COMPANY OF CANADA, LIMITED—Quarterly dividend is raised to a record of 40 (US) cents from the 37½ cents rate paid for the three previous quarters.

W. P. BUTTERFIELD, LIMITED—In view of the results so far known, the interim dividend is raised from 5 per cent. to 5½ per cent. on account of the year ending March 31, 1961.

JOHN I. THORNYCROFT & COMPANY, LIMITED—Group net loss of £6,700 was incurred in the year ended July 31, 1960, compared with a loss of £65,214. The dividend is maintained at 6 per cent.

RALEIGH INDUSTRIES, LIMITED—Net profit of the company, which is a subsidiary of Tube Investments, Limited, for the year ended July 31, 1960, was £905,370 (£831,817), after tax of £1,099,888 (£890,750).

BRITISH PRESSURE DIECASTING, LIMITED—Second interim of 7½ per cent.—the minimum forecast when the newly created shares were placed last July—makes 12½ per cent. for the year ended October 31, 1960.

SIMON ENGINEERING, LIMITED—The directors have declared an interim dividend on the 15,021,102 ordinary shares of 5s. each at the rate of 10 per cent., less tax, in respect of 1960, as forecast at the time of the merger.

E. G. BROWN & COMPANY, LIMITED, sheet metal workers, of London, N.17—Final dividend of 1½d. per 2s. share makes 2½d. (2½d.) per share for the year ended September 30, 1960. Group net profit was £20,727, after tax of £18,690.

SAMUEL OSBORNE & COMPANY, LIMITED, makers of special steels, etc., of Sheffield—Final dividend of 25 per cent. makes 35 (27½) per cent. for the year ended July 31, 1960. Net profit rose from £535,361 to £706,591, after tax of £869,716 (£600,140).

ROBERT HUDSON, LIMITED, manufacturers of light railway equipment, of Leeds—Net balance for the year ended June 30, 1960, was £167,802 (£279,660), after tax of £144,500 (£219,500). Final dividend of 8½ per cent. makes 15 per cent., against 16½ per cent. forecast.

HARDYPICK, LIMITED—The offer of Laycock Engineering, Limited, to acquire the company has been accepted by the holders of 88 per cent. of the preference shares and 95 per cent. of the ordinary shares. Both offers have been declared unconditional, but remain open for late acceptances.

N. GREENING & SONS, LIMITED, woven wire manufacturers, of Warrington (Lancs)—Group turnover and profits in the first six months of the current year are above the average for the previous year. Interim dividend of 2½ per cent. is to be paid on a capital increased by a one-for-two scrip issue.

HALE & HALE (TIPTON), LIMITED, blackheart malleable ironfounders—Final dividend of 15 per cent. maintains 20 per cent. for the year ended August 4, 1960. Group net profit was £19,680 (£26,219), after tax of £10,959 (£22,100). Last year there was a 60 per cent. cash distribution from capital profits.

HEENAN & FROUDE, LIMITED, manufacturing engineers, of Worcester—Dividend is effectively raised by 1½ per cent. to the equivalent of 11½ per cent. with a final of 8 per cent., as forecast, on a capital increased by a 50 per cent. scrip issue. Group net profit for the year ended September 3, 1960 was £282,748 (£258,880), after tax of £281,639 (£262,589).

CRANE, LIMITED, manufacturers of pipe line materials, of London, E.C.4—All the ordinary capital of Rhodes Brydon & Youatt, Limited, pump manufacturers, etc., of Stockport (Ches), and its wholly-owned subsidiary, Furnival & Company, Limited, guillotine makers, of Stockport, has been acquired. It is intended to continue and expand the present range of products.

DOMINION STEEL & COAL CORPORATION, LIMITED—"Very poor" financial results for the current fiscal year ending December 31, 1960, are forecast by the president of the Canadian company, Mr. A. L. Fairley, Jnr. These would be due principally to adverse seasonal factors and also to several specific situations within the company which would be cleared up by the end of the year.

CRABTREE ELECTRICAL INDUSTRIES, LIMITED—Final dividend of 8½ per cent. on a capital doubled by a scrip issue makes the equivalent of 12½ (10) per cent. for the year ended July 31, 1960. A final dividend of not less than 7½ per cent. was forecast. Group trading profit increased from £454,698 to £557,334, but after tax of £248,471 (£169,685) and other heavier charges, the net profit was lower at £206,063 (£222,752).

METAL TRADERS, LIMITED—Profit after tax for the year ended March 31, 1960, has risen to £130,116 (£106,558) and dividend of 9d. per 2s. unit plus a bonus of 3d. per unit is repeated. The chairman, Brig. H. P. Crosland, states that at the present time business in non-ferrous metals in America is at a low ebb and during the last four months there have been signs of falling off in business in this country also.

SANDERSON KAYSER, LIMITED (formerly Sanderson Bros. & Newbould, Limited), steelmakers, etc., of Sheffield—Interim dividend is to be paid on account of 1960 on capital increased by 100 per cent. scrip issue and shares issued under the merger with Kayser Ellison & Company, Limited. In the directors' opinion, profits for the current year will enable a final of 12½ per cent. to be paid, making 17½ per cent., as forecast.

WOLVERHAMPTON DIE-CASTING COMPANY, LIMITED—Group net profit for the year ended June 30, 1960, rose to £123,143 from £93,324, after tax of £98,217 (£85,245). A final dividend of 25 per cent. makes 35 (30) per cent. for the year. Acceptances in respect of 60 per cent. of the shares have been received in response to the recent offer of a share exchange for the ordinary capital of British Pressure Die Castings, Limited.

COPE ALLMAN & COMPANY, LIMITED, manufacturers of brass, copper, and cased tubes, of Birmingham—Total group turnover for the current seven months was 23.5 per cent. up on the same period of last year, states the chairman, Mr. L. J. Matchan. This was despite the effect of the recession in the motor industry and the credit "squeeze." This year, the company would be entering the field of aerosol valves for the packaging industry, he said.

COCHRAN & COMPANY, ANNAN, LIMITED, engineers and boilermakers—The chairman, Mr. Robert Adeane, states that, due to advances in design, the company has increased its share of the available market both at home and oversea. In certain countries consideration is being given to the problem of local construction and an agreement to manufacture Cochran boilers has just been signed with Wright Boag & Head Wrightson (Ptv), Limited, South Africa.

RANSOME & MARLES BEARING COMPANY, LIMITED—Group net profit for the year ended June 30, 1960, was £836,910 (£609,396). The dividend is raised from 17½ per cent. to 21 per cent. and it is proposed to make

a one-for-two scrip issue. The Board of Trade has approved a further extension to the Annfield Plain factory. The extension is being built to requirements and the company is purchasing this together with the land and existing factory for some £900,000 amortized over 15 years.

MIDLAND ALUMINIUM, LIMITED—Progress has been made in connection with seeking opportunities to develop present activities of the group and to broaden its base still further by expanding into other allied spheres. The board feels that opportunities may arise for acquiring suitable businesses on a share exchange basis and consequently consider that the ordinary capital should be increased to £1,000,000 by the creation of 1,660,000 ordinary 5s. shares to be available for issue when necessary.

LAPORTE INDUSTRIES, LIMITED—All the issued capital of Cupola Mining & Milling Company, Limited, has been bought for an undisclosed sum from Head, Wrightson & Company, Limited. The company intends to meet the rising demand for acid grade fluorspar by expanding production at the company's flotation plant at Stoney (Derbyshire), which has recently been installed by Head Wrightson. The operations of Cupola will be integrated with those of Glebe Mines' Limited, another Laporte subsidiary.

India's AEI-Designed Plant Opened

TRIBUTE to the help given by Britain in the setting up of a heavy electrical factory in Bhopal, Central India, was paid by Mr. Nehru, the Prime Minister, when he opened the factory on Sunday. The State-run plant will soon make India self-sufficient in electrical power equipment and was built at a cost of Rs. 475,000,000 (about £35,600,000).

The factory, which is already in production, was designed by Associated Electrical Industries, Limited, and largely equipped by British companies. Nearly 200 Indian engineers were sent to this country for training.

The plant is due to be completed in 1962 and will produce Rs. 500,000,000 (about £37,500,000) worth of heavy electrical equipment annually by 1968. By that time it will be stocked with production equipment worth £15,000,000, nearly all of it bought on credit from Britain.

GLOVER & MAIN BID £1,000,000 FOR BENHAM

OFFER, worth nearly £1,000,000, has been made by Glover & Main, Limited, engineers and domestic appliance manufacturers, of London, S.W.1, for the 244,000 issued £1 ordinary shares of Benham & Sons, Limited, cooking, heating, and ventilating engineers, of London, W.1. The total consideration is £244,000 cash and the allotment of £732,000 unsecured 6½ per cent. loan stock, 1964.

Earlier this year Glover & Main announced the acquisition for £1,100,000 cash of James Stott & Company (Engineers), Limited.

Mr. J. C. George, Parliamentary Secretary to the Ministry of Power, has appointed Mr. FRANK LILLEY, MP for the Kelvingrove Division of Glasgow, to be his parliamentary private secretary.

In Parliament

KEEPING COAL MOVING

COULD a general direction to the British Transport Commission to take all possible steps to avoid shortages of coal in the country by providing an adequate supply of wagons for moving coal from the collieries be given, MR. ALBERT ROBERTS (Lab.) asked.

MR. ERNEST MARPLES, Minister of Transport said he was in close touch with BTC, which assured him that in conjunction with the National Coal Board, it was taking all practical measures to secure the free movement of industrial and domestic coal during the coming winter. It was not so much a shortage of wagons as a shortage of staff in the crucial areas such as London, Birmingham, Salford, etc.

GOVERNMENT'S FIRM INTENT

IT remains the firm intention and, indeed, the confident hope of the Government that within the lifetime of the present Parliament the work of the Iron and Steel Holding and Realization Agency will be substantially completed. It could be wound up when it had substantially discharged its duty of returning the steel industry to private ownership.

This written reply was given by the CHANCELLOR OF THE EXCHEQUER, Mr. Selwyn Lloyd, to MR. JOHN FARR (Con.) who had asked whether ISHRA could be wound up forthwith and other early steps taken to release the nationalized steel industry from State control.

SELECT COMMITTEE appointed to examine the reports and accounts of the nationalized industries will consist of the following:—Mr. Austen Albu, Mr. William Blyton, Mr. Alan Fitch, Mr. E. Popplewell, and Mr. Tom Steele (Lab.), Mr. A. F. Holt (Lib.), and Sir John Barlow, Mr. Aubrey Jones, Col. Claude Lancaster, Sir Toby Low, Sir Richard Nugent, Mr. J. W. W. Peyton, and Dame Irene Ward (Con.).

Harper Engineering Plans "Substantial" Expansion

SUBSTANTIAL expansion plans in this country and in the US and Germany are under consideration by Harper Engineering & Electronics, Limited. The group's overdraft now stands at about £2,000,000 and new financing is being arranged—probably through a prior loan charge on the company's assets. The company is co-operating with Hawker Siddeley Nuclear Power Company, Limited, in the design, manufacture, and sale of high temperature furnaces for nuclear reactors.

For the year ended June 30, 1960, a final dividend of 40 per cent. is to be paid, making 80 per cent., which was the minimum forecast. In the previous year a total dividend of 30 per cent. was paid. Group net profit was £645,360 (£115,801), after tax of £202,944 (£50,951).

LORD KILMUIR, the Lord Chancellor, visited the Westfield Terrace Works of Wm. Marples & Sons, Limited, hand tool manufacturers, last Friday and paid warm tribute to the firm's export record. He said he had made the visit because he was anxious to see how a firm that was doing so well in the export trade functioned. Whereas similar firms exported about 17 per cent. of their products, Marples exported a third of its output.

NEWS IN BRIEF

BRITISH TIMKEN SOUTH AFRICA, LIMITED, has changed its name to Timken South Africa Proprietary, Limited.

PLANS HAVE BEEN APPROVED by Grantham (Lincs) Town Council for extension of the present office block of the engineering firm of R. H. Neal & Company, Limited.

NINE NEW MEMBERS were presented with gold watches at the third annual gathering of the 25-Year Club of Tinsley Wire Industries, Limited, Sheffield, on Saturday.

RECORD OUTPUT of 1,562,000 tons of raw steel and 1,260,000 tons of pig-iron was produced by French steelmakers last month, the French Steel Industry Federation has announced.

OF THE £1,700,000 already found for the new St. Catherine's College, Oxford, the foundation stone of which was laid by the Queen last Friday, over £1,300,000 has been contributed by industry.

FULL-TIME WORKING was resumed on Monday at the Shotts (Lanarkshire) factory of the Cummins Engine Company, Limited. About 500 workers at the American-owned factory had been on a four-day week since last month.

HEADQUARTERS of the Scottish Divisional Coal Board in Edinburgh has been sold for £100,000 to a private development company. Next year the board is moving to a new £750,000 building in Laurieston Place, Edinburgh.

FOUR MONTHS after Precision Forgings, Limited, a subsidiary of Garringtons, Limited, dropforgers, of Bromsgrove, decided to set up a new factory at Cwmbran (Mon), the first forging was produced at the works last week.

SIXTY YEARS' SERVICE with Charles Richards & Sons, Limited, makers of bolts, nuts, and bright drawn steel bars, of Wednesbury (Staffs), has been completed by Mr. Arthur Vaill (74), a toolmaker. A presentation was made to him last Friday.

"INDUSTRIAL RELATIONS" will be debated on November 22 during an open meeting of the students and graduates section of the British Institute of Management's London Branch at the Wellcome Foundation Hall, Euston Road, London, N.W.1.

SAMUEL OSBORN & COMPANY, LIMITED, Sheffield, has opened a new warehouse at 7, Millfields Road, Bilston, where stocks of tool steels, engineers' small tools, and files are maintained for the convenience of customers in the Birmingham and Midlands area.

JUBILEE of the occupation of the Hadley Castle Works, Wellington (Salop), by Joseph Sankey & Sons, Limited, is to be celebrated this month. About 100 employees moved from the Bilston works to Hadley Castle in 1910 and now some 6,000 are employed there.

RUSH ORDER for 34 tons of ship's cable was completed at the Coatbridge (Lanarkshire) works of the North British Electric Welding Company, Limited, in record time last week. Part of the order was dispatched on the same day to the storm-damaged ship Wellpark in the Irish Sea.

DURING SEPTEMBER coal shipments from the port of Sunderland dropped by 110,926 tons to 69,529 tons, due to the seamen's strike. Last year 180,455 tons were shipped in September. Coal shipments from the port for the first nine months of the year fell by 83,377 tons to 1,529,514 tons.

IN SPITE of the great advances in automation, craftsmanship still formed the foundation on which the country's prosperity rested, said Sir Donald Bailey, designer of the Bailey bridge, at the distribution of awards to apprentices of Robert Jenkins & Company, Limited, Rotherham, on Monday.

FURTHER 550 workers at the Cowley factory of the Pressed Steel Company, Limited, are to be made redundant. The first 200 will receive notice today (Friday) and the rest will be dismissed on a "last in first out" basis over the next two weeks. Already 200 workers have lost their jobs at the factory.

TWO POTLINES are to be closed at the Arvida (Quebec) works of the Aluminium Company of Canada, Limited, in the near future. In a recent statement, Mr. M. N. Davis, the president, said that the company was reducing production moderately following the build-up of primary metal inventories.

SWEDEN'S LARGEST producer of non-ferrous metals, Svenska Metallverken, is to spend some Kr. 15,000,000 (£1,330,000) in the next three years to raise its output of rolled semi-finished aluminium products from 20,000 tons to 30,000 tons a year and its output of pressed aluminium products from 2,500 tons to 3,500 tons a year.

STATE-OWNED coking plant, producing 250,000 tons of coke, 20,000 tons of tar, and about 5,000 tons of benzole a year, is to be built in northern Norway, near the similarly-owned steel plant, A/S Norsk Jernverk. The plant will be built, subject to parliamentary approval, at a cost of Kr. 80,000,000 (£4,000,000).

"INTRODUCTION TO INDUSTRY" training courses at the Chippenham (Wilts) works of the Westinghouse Brake & Signal Company, Limited, are again available to boys taking GCE "A" level scientific subjects. Applications should be sent to the personnel superintendent at the company's Chippenham works before December 1.

THORNCLIFFE NEWS, the works newspaper of Newton, Chambers & Company, Limited, Thorncliffe, near Sheffield, has just published its 1,000th issue. It was started in the middle of the last war as a duplicated bulletin intended primarily for employees in the chemical works. It will celebrate its 21st birthday on January 1, 1961.

TRANSFER OF THE Alley & MacLellan (Polmadie), Limited, compressor business to the Cathcart Works of G. & J. Weir, Limited, is announced in a joint statement by the two companies. After the transfer the business will be conducted by Alley Compressors, Limited, constituted as a wholly-owned subsidiary of G. & J. Weir for this purpose.

FOLLOWING the removal of import duty on anhydrous borax, Borax Consolidated, Limited, has reduced the price of "Dehybor" by £10 10s. a ton. The new price is £58 10s. a ton in paper bags and £59 10s. a ton in hessian sacks. The company states that there is no change in the price of other grades of borax (decahydrate and pentahydrate), nor in the price of boric acid.

SHAREHOLDERS of Phoenix-Rheinrohr, the German steel concern, have been told that the 1959-60 dividend will exceed the 10 per cent. paid for 1958-59. The company's crude steel production in the year ended September 30 totalled 3,200,000 tons, or 33 per cent. more than in 1958-59. Output of rolled products totalled 2,100,000 tons and that of tubes 747,000 tons. The supervisory board has approved a DM125,000,000 investment programme.

Lord Mills Deputy Leader in Lords

FIRST Minister of Power, Lord Mills, now Paymaster-General has been appointed Deputy Leader of the House of Lords, it was announced on Sunday. Lord Mills, who is 70, succeeds the Earl of Home, who is too busy as Foreign Secretary to continue.

LORD MILLS

Before embarking on his political career, Lord Mills was chairman of W. & T. Avery, Limited, manufacturers of weighing and counting machines, of Birmingham, and a director of a number of other companies. He became Minister of Power when the office was created in 1957.

He has had a long experience of working with Government departments. He was Controller-General of Machine Tools from 1940 to 1944, head of the production division of the Ministry of Production in 1943, president of the Economic Sub-Division of the British element of the Control Commission for Germany until 1946, and honorary adviser on housing to Mr. Macmillan when the latter was Minister of Housing in 1951. Lord Mills became Paymaster-General in the Cabinet reshuffle of October, 1959.

Amalgamation Prescribed for Shipbuilding

FOREIGN yards also build good ships, British shipbuilders were told on Thursday of last week by Mr. Anthony Cayzer, the deputy chairman of the British and Commonwealth Shipping Group, at a launch at Newcastle-upon-Tyne. "Foreign yards are carrying out considerable research and more research must be undertaken by British yards and engine builders if they are to compete," he said.

He thought that more mergers should take place in the industry. A few large companies would be able to carry out research far more easily and efficiently. This applied particularly to the engine makers.

Head Wrightson Acquires Sunrod Boiler Designs

AGREEMENT has been reached for the transfer in the immediate future of the industrial boiler activities of Sunrod, Industrial, Limited, heat exchange engineers, etc., St. Mary Cray (Kent), to Head Wrightson Processes, Limited, a subsidiary of Head, Wrightson & Company, Limited. Sunrod will in future concentrate on the sale, design, and manufacture of patent heat exchangers.

The acquisition of the Sunrod designs will further expand the work of Head Wrightson's industrial furnace division, at present supplying upshot heaters to the petroleum and chemical industries.

CISWO in Words and Pictures

IN words and pictures the aims and achievements of the Coal Industry Social Welfare Organization are outlined in its eighth annual report. Its record of major welfare building projects completed throughout the country during the war is an impressive one. No less than £479,000 was spent on recreational building work and £131,000 on recreation ground layout.

In 1959 new centres were opened and facilities inaugurated or extended as follows:—Scottish Division: Glenrothes, Drongan, Clackmannan, Bowhill, Croy, Lochore, East Whitburn, and Poltonhall. Northern (N & C) Division: Ashington, East Walbottle and Prestwick, North Walbottle, North Seaton, and Backworth. Durham Division: Blackhall, Vane Tempest, Shotton, and Brandon.

North-Eastern Division: North Gawber, Maltby, Grimethorpe, Ryhill, Havercroft, and Thorpe Hesley. North-Western Division: Sutton Manor, Gresford, Lea Green, Swinton and Pendlebury, and Standish. East Midlands Division: Renishaw, Ripley, Ibstock, Measham, and Alfreton. West Midlands Division: Victoria and Knypersley, Polesworth, Arley, Baggeridge, Littleton, Wimblebury, Hilton Main, Beech Tree, Wollescote, Silverdale, Coventry, and Keresley. South-Western Division: Steam Mills, Joys Green, Victoria (Mon), and four recreation grounds in the division have had additional facilities. South-Eastern Division: Tilmanstone and Betteshanger.

The assertion that angling has more active followers than any other sport in Britain is borne out by the report which notes that a North-Eastern Divisional angling match attracted 1,039 competitors and in the neighbouring North-Western Division they did not do too badly with 560 entries.

Pigeon racing attracted 1,612 entries for the Up North Combine race from Lille (France) and this year the enthusiasm (so far as miners' pigeon-racing competitions are concerned) crept south to Kent for the first time.

Bowls, golf, football and cricket, boxing, brass bands, male voice choirs, art competitions, handicrafts—they are all listed in CISWO's report which has not overlooked two of the more important features of its work—youth and the disabled and paraplegic. For its work in these two spheres alone the organization's existence is more than justified.

Importance of Engineering Services to Modern Management

ONE-DAY conference of the Institute of Management on "The Importance of Engineering Services to Modern Management" will be held at the Connaught Rooms, Great Queen Street, London, W.C.2, on December 1. Preventive maintenance together with work study, plant history, modification to existing machinery, job costing, and budget comparisons will be considered.

The chairman of the conference, which is designed for directors and senior executives who wish to evaluate and implement ways of improving their productivity figures, will be Mr. E. W. Hancock, past national president of the Institution of Production Engineers and a director and general manager of Humber, Limited.

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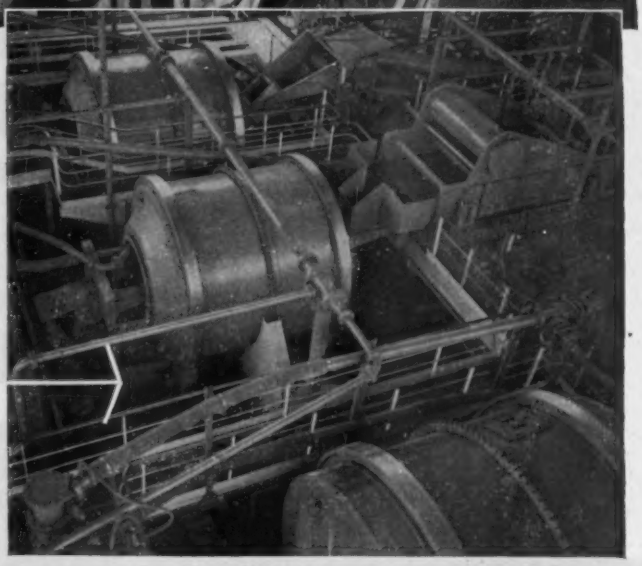
Photograph of Flämrich Screens by courtesy of the National Coal Board



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Miners' Welfare National Scholarships

TRUSTEES of the Miners' Welfare National Scholarship and Students' Exhibitions Schemes, which are operated by the Coal Industry Social Welfare Organization, announce the award of 41 new scholarships and 16 new exhibitions in 1960. Fifteen of the new scholarships went to candidates from the North-Eastern Division of the National Coal Board, six to the Durham Division, five to the Northern (N&C), four each to the Scottish and East Midlands divisions, two each to the West Midlands and South Western divisions, and one each to the North-Western and South-Eastern divisions and to NCB headquarters.

In the past 34 years 542 scholarships and 201 exhibitions have been awarded under these schemes. The awards are tenable at senior and provincial universities and at teaching hospitals.

Of the 20 scholarships holders who successfully completed their courses this year, four obtained first-class and 11 second class honours degrees, one each a degree in medicine and in dental surgery, and three were ordinary degrees. Eight exhibitioners also completed their courses this year and their results comprised one first class and two second class honours degrees, one ordinary degree, one diploma, and three certificates.

Applications are invited from those employed in the coal-mining industry and to the children of such employees who are leaving school, for scholarships and exhibitions to be awarded in 1961. The degree and diploma courses need not have anything to do with mining, but applicants must be British subjects and not less than 17 on January 25, 1961 (the closing date of the competition). Full particulars and forms of application may be obtained from Mr. H. Atkinson, Secretary, Miners' Welfare National Scholarship Scheme, 5, Hobart Place, London, S.W.1.

Irish Mining and Quarrying Society

VICE-PRESIDENTS of the Irish Mining and Quarrying Society elected at the society's recent annual meeting were Mr. C. P. Blair (Gypsum Industries, Limited), Mr. M. V. O'Brien (director, Geological Survey of Ireland), and Mr. A. Rose (Castlecomer Collieries, Limited). The election of Mr. Vincent Layden as president was reported in last week's IRON AND COAL.

The council for the ensuing year is:—Mr. J. R. Bambling (Castlecomer Collieries, Limited); Mr. D. F. Quirke (Cement, Limited); Mr. J. A. Dolan (Cement, Limited); Mr. A. J. Jennings (consulting engineer, of Sligo); Mr. P. J. Fleming (Fleming's Fireclays, Limited); Mr. M. J. O'Callaghan (Roadstone, Limited); Mr. H. T. Seale (St. Patricks Copper Mines, Limited), and Mr. V. J. McCabe (University College, Dublin).

Hon. secretary of the society is Mr. James Tonner, 5, Clare Street, Dublin. The hon. treasurer is Mr. V. J. McCabe. The society's annual dinner is to be held at the Shelbourne Hotel, Dublin, on December 10.

FIRST STAGE of the drilling programme in the Leinster (Eire) coalfield has been completed. The second stage, which will take about two years to complete, is now in progress.

Nottingham Pits Break National OMS Record

WHAT is claimed to be an all-time productive efficiency record for any of the National Coal Board's 48 Areas was achieved last month by the nine producing collieries in the No. 6 (Nottingham) Area of the East Midlands Division. The collieries concerned are Babbington, Bestwood, Calverton, Clifton, Gedling, Hucknall, Linby, Radford, and Wollaton.

Output per manshift for the 12.500 men employed at the pits averaged 48.2 cwt.—nearly twice the national average. Output per manshift at the face averaged just over 6½ tons. Linby, Clifton, and Gedling collieries set up individual records with overall OMS figures of 71.1, 52.6, and 44.4 cwt., respectively, and Bestwood achieved its best-ever monthly face OMS of 119.9 cwt. Last week Linby became the first pit in the No. 6 Area to reach an overall OMS of more than 4 tons with a figure of 80.3 cwt.

The Area's achievement is a new stage in a steady rise in efficiency since 1947. Last month's productivity figure was 10½ cwt. higher than in October four years ago. The Area is scheduled to produce an extra million tons of coal annually by 1965.

Mr. Noel Smith, Area general manager, commented: "We have good workmen, willing and eager to try new machines and methods, and we also have an efficient and enthusiastic production management team. We are helped by the rapid advance in mechanized mining—two thirds of our output is now cut and loaded mechanically at the face."

ECGD Insurance Reflects Increased Exports

RECORD level of business of £180,200,000 was reached under the Export Credits Guarantee Department's "commercial" insurance during the third quarter of 1960. In the first nine months of the year business, at £520,700,000. was 13 per cent. above the corresponding period of 1959. The number of short-term policies issued during the third quarter increased from 4,996 to 5,112, the face value rising from £673,600.000 to a new peak of £699,300,000. Among these policies was one for textile machinery with a face value of £5,600,000 and another for earth moving equipment valued at £1,250,000.

Medium-term policies amounted to £17,700,000, compared with the previous quarter's high total of £39,300,000. Among the contracts covered were those for a sugar factory, textile machinery, a newsprint and paper plant, and aircraft.

CONSULTANT to deal with all cases of subsidence caused by mining is to be appointed by Durham County Council.

PLANNING APPROVAL has been given to the building of assembly shops, stores, and warehouses at the Falkirk (Stirlingshire) works of the Grange-Camelon Iron Company, Limited. The extensions will cost £15,000.

LONG-SERVICE AWARDS have been made by Smith & Wellstood, Limited, ironfounders, of Bonnybridge (Stirlingshire), to Mr. George Brown, Mr. Robert Bellingham, Mr. Robert Russell, and Mr. John Paterson on the completion of 50 years' service.

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